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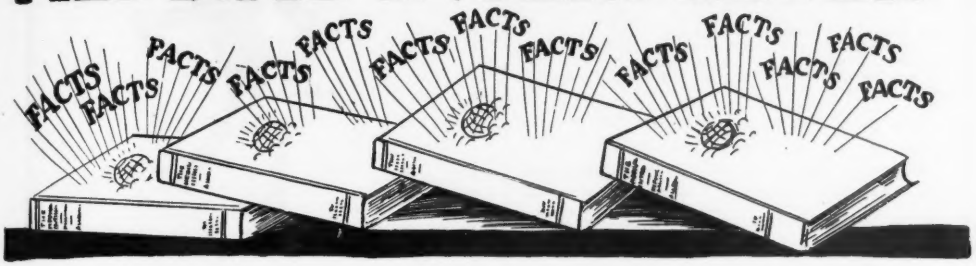

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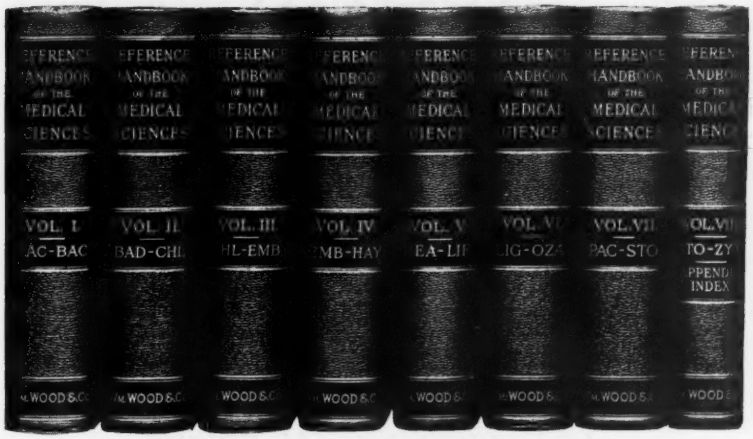

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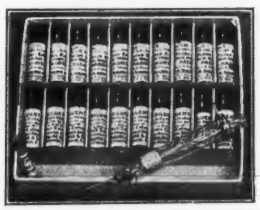

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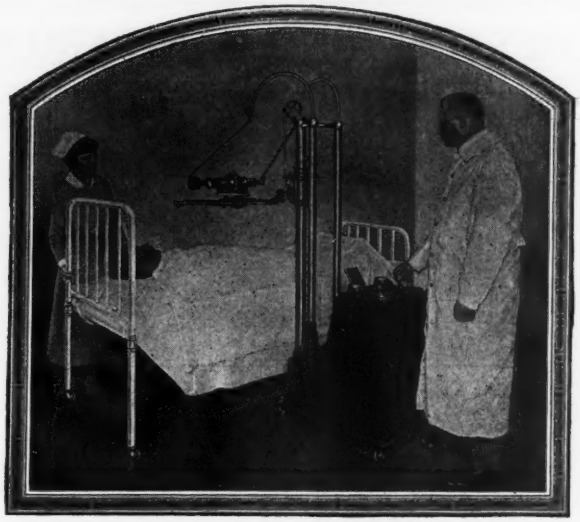

BRINGING THE X-RAYS TO THE PATIENT

A FEW YEARS AGO the best mobile X-Ray Unit was owned by the U.S. Army. The equipment comprised a motor truck on which a Delco generator and Victor X-Ray Unit with current controlling devices were mounted.

From this has evolved the Victor Stabilized Mobile X-Ray Unit of the present, the highest perfection yet attained in apparatus of this type.

It was Victor research and development work that made this astonishing result possible—research which culminated in the self-rectifying "Radiator" Type Coolidge Tube. The X-rays are now easily brought to the bedside of the patient too weak to be moved to the X-ray room.

This Victor Mobile Unit is more efficient than even the larger and heavier apparatus of ten years ago. Its milliamperage is 30, which is a gauge of its powers. Moreover, it is provided with the Victor-Kearsley Stabilizer which insures uniformly good results in spite of current fluctuations in the line. Only Victor Mobile X-Ray Units are thus equipped.

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This Mobile Unit has been designed to meet every requirement for practical radiographic and fluoroscopic diagnosis.

An exhaustive descriptive circular will be sent on request

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Sales Offices and Service Stations in All Principal Cities

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THE CHESTON KING SANITARIUM, Inc.

For Treatment
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LIGHT MENTAL
DISEASES
NERVOUS DISEASES
AND GENERAL
INVALIDISM

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CHESTON KING
and
DR. W. A. GARDNER
Proprietors and
Medical Directors

At Stone Mountain, Ga., 16 Miles from Atlanta
Address all communications to 204-205 Peachtree Bldg., Atlanta, Ga., or Stone Mountain, Ga.
Phones: City Office, Ivy 2737; 32 Stone Mountain, Ga.

TO THE DOCTORS:

After having owned and operated the Howell Park Sanitarium in Atlanta for several years I built the Cheston King Sanitarium on Peachtree Road, and during the crisis of the war the Government bought it from me.

Now I have just completed a Sanitarium that the profession can feel proud of.

Every room in this beautiful institution silently preaches the Gospel of Sunshine, impresses you with the tender care of Home—and sways your thoughts with the beauties and wonders of nature. As you view Stone Mountain, the largest Granite Mountain in the World—not excepting the Rock of Gibraltar, you have gazed upon one of the Wonders of the World. We have endeavored to make this Sanitarium, from the standpoint of location, equipment, cuisine, refined nurses, second to no institution in our country.

For any further information address Dr. J. Cheston King, 204-5 Peachtree Bldg., Atlanta, Ga., or Dr. W. A. Gardner, care The Cheston King Sanitarium, Stone Mountain, Ga.

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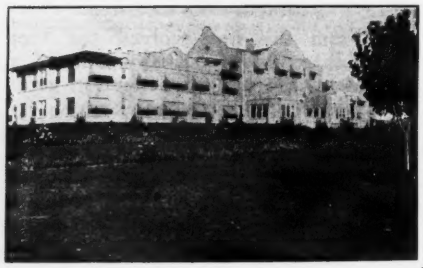
REST AND PRECISION IN DIET

930 South 20th St.
BIRMINGHAM, ALA.

In connection with offices of Dr. James S. McLester.



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THE ARZANER SOUTHERN HOME, a view of which is printed above, is located just beyond the city limits of Forsyth, Ga., twenty-five miles from Macon and seventy-five miles from Atlanta, on the main line of the Central of Georgia Railway. The climate is ideal the year round and the water excellent. This institution combines the advantages of both country and city, such as lights, water, etc. Large airy porches, sun parlors, sleeping porches, bedrooms, and an up-to-date baby ward. We furnish all the comforts of home life, including auto rides, music, etc.

Special provision made for aged patients who require childhood attention and children suffering from malnutrition and deformities, affording the comforts of home and yet providing trained supervision.

Dr. H. H. Kinney's Infirmary
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Has recently added the Original Battle Creek Treatments and an Electrotherapy Department. For further information address Dr. Kinney's Infirmary, Okolona, Miss., Mrs. Juliet King, Secy.

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For the treatment and education of tuberculous patients. Seventy-five miles northwest of and twelve hundred feet higher than San Antonio. Mild winters, cool breezy summers. Hospital Building and Hollow Tile Cottages with modern conveniences. Beautiful mountain scenery. Prices moderate. Trained nurses.

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Modern, thoroughly equipped Sanatorium for the Scientific Treatment of all forms of Tuberculosis and diseases of the chest.
Moderate climatic conditions and an altitude of 4330 feet make it ideal for the tuberculous patient.
Individual rooms (with or without private bath). Private sleeping porches of the most approved design.
Garden, dairy and poultry yard in connection with the institution.
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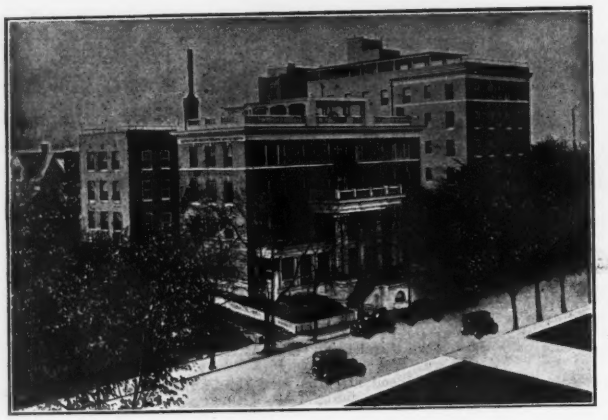

Fireproof buildings, modern in every respect, for the treatment of surgical, gynecological and obstetrical cases. A limited number of medical cases admitted. No mental or alcoholic cases or drug addicts admitted. Laboratories complete for all modern investigations and diagnoses, also x-ray and radium treatment. Training school for nurses.

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For Nervous and Mental Diseases, Drug and Alcohol Addictions and Nervous Invalids Needing Rest and Recuperation

Established 1903. Strictly ethical. Location delightful summer and winter. Approved diagnostic and therapeutic methods. Modern clinical laboratory. 7 buildings, each with separate lawns, each featuring a small separate sanitarium, affording wholesome restfulness and recreation, in doors and out doors, tactful nursing and homelike comforts. Bath rooms en suite, 100 rooms, large galleries, modern equipments, 15 acres, 350 shade trees, cement walks, playgrounds. Surrounded by beautiful par, Government Post grounds and Country Club.

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For information and booklet write Drs. Griffin and Griffin.

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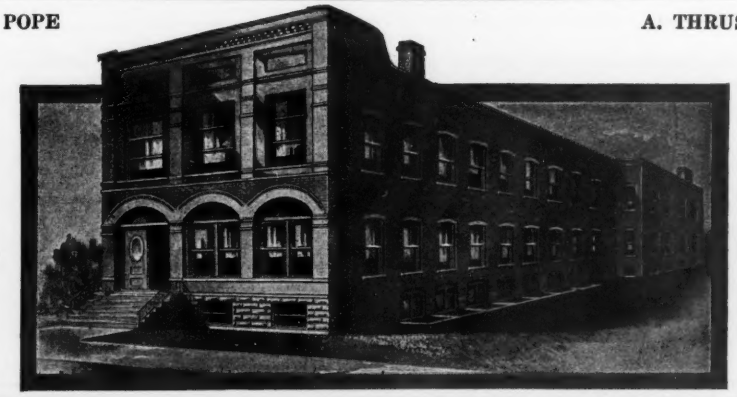

A MODERN up-to-date, private Infirmary equipped with steam heat, electric lights, electric fans, modern plumbing and superior furnishings. Solicits all cases of functional and organic nervous diseases, disease of the stomach and intestines, rheumatism, gout and uric acid troubles, drug habits and alcoholism. Bed-ridden cases not received without previous arrangement.

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For MENTAL and NERVOUS DISEASES and ADDICTIONS.

Moved to its new location July 1, 1922.
An entirely new plant has been erected.

Separate buildings for men and women, ideally arranged and equipped with every facility for the comfort, care and treatment of the class of patients received. Situated in the midst of a fifty acre tract, and surrounded by large grove and attractive lawns. Two resident physicians. Training school for nurses.

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On Murfreesboro Pike, one-half mile east of old location.

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For the treatment of Nervous and Mental Diseases, General Invalidism and Drug Addictions. Separate Department for the Custodial Care of Chronic Cases.

The Sanitarium is located on the Marietta Car Line, 10 miles from the center of the City, near a beautiful suburb, Smyrna, Ga. Grounds comprise 80 acres. Buildings are steam heated, electrically lighted, and many rooms have private baths.

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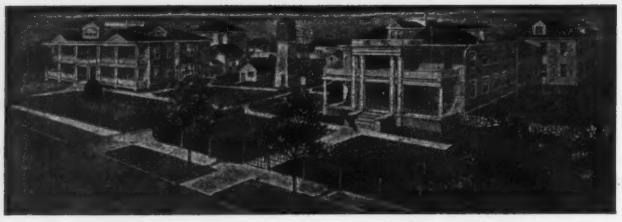
P. O. BOX 978, FORT WORTH, TEXAS



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(Incorporated under laws of Texas)

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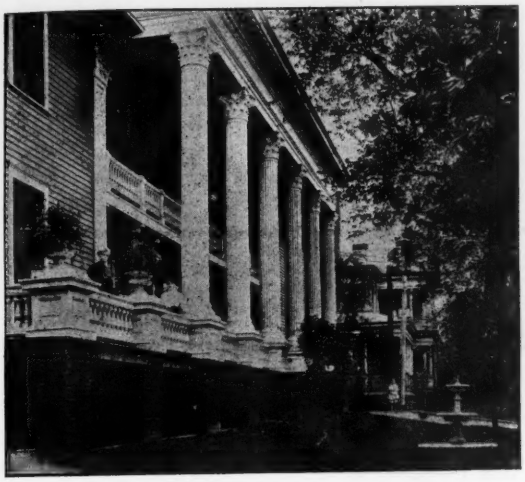
BLACKMAN SANITARIUM

172 Capitol Ave., Atlanta, Ga. **Dr. W. W. Blackman, Medical Director.**



Digestive and Nervous diseases, Heart-artery-kidney affections, Malnutrition and underweight, Diabetes, Obesity, Anemia, Toxemias, Malaria, Rheumatism, Sciatica, Neuritis.

(Surgical, contagious, mental, alcoholic and drug-habit cases not received.)

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Laboratory for blood chemistry and for chemical and microscopic examinations in general.

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Homelike resort atmosphere.

Rates $35 to $50 per week.

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For Tuberculosis in any Form.

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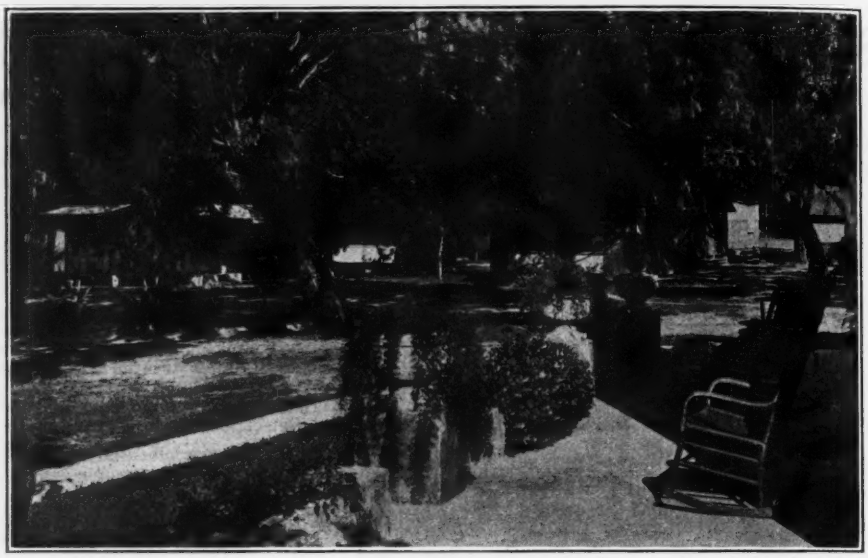
19 miles North of Nashville, Henderson Division of L. & N. Ry.

Location ideal, elevation 1,000 feet, buildings modern, hot and cold water, gas lights, perfect sewerage and excellent water supply. Tuberculins and vaccines administered in suitable cases. X-Ray Diagnosis. Heliotherapy. Rates very reasonable.

Inquiries appreciated. Illustrated booklet on application.

DR. W. S. RUDE, Medical Director. **RIDGETOP, TENN.**



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Ideally located near San Antonio, Texas. An institution that offers the proper care of tuberculous patients at moderate rates. For booklet and other information please add ress the manager.

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CLASS OF PATIENTS—Those who need help to overcome the bondage of habit. Rest from overwork, study or care. Diversions for the depressed and disquiet mind—and such as are suffering from any disease of the nervous system. The treatment consists of the gradual breaking up of injurious habits, and the restoration to normal conditions, by the use of regular and wholesome diet, pure air, sunlight, and exercise, with such other remedies as are calculated to assist nature in the work of restoration.

Special attention is given to the use of electricity. Twenty years' experience has proven it invaluable in cases of nervous prostration, incipient paralysis, insomnia, the opium and whiskey habits, and those nervous affections due to uterine or ovarian disorders.

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A private Sanitarium specializing in the scientific treatment of mild nervous cases, exhaustion and toxic psychoses, constitutional and metabolic disturbances, functional neuroses where rest and recuperation are desired.

Surgical convalescents and general invalidism.

Most modern and extensively equipped Sanitarium in the Southern country.

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Located in the Eastern suburbs of the city. Sixteen acres of beautiful grounds.
All equipment for care of patients admitted.

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Near Washington, D. C. Baltimore & Ohio Railroad and Electric Line from Washington

This sanitarium under experienced management offers superior advantages for the treatment of patients suffering from Nervous and mild Mental Diseases, and for elderly persons needing skilled care and nursing; combining the equipment of a modern Psycopathic Hospital with the appointments of a refined home. The Hydrotherapy Departments is complete in every detail including the Nauheim Baths for Arteriosclerosis, Heart and Kidney Diseases.

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Medical Staff: Dr. R. E. Flack, Dr. Geo. Alexan der, Dr. Edw. W. Schoenheit, Dr. Louis Dienes.

A modern and completely equipped institution for the treatment of tuberculosis. High-class accommodations. Strictly scientific methods. For particulars and rates write to

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DOCTORS JAS. K. HALL, P. V. ANDERSON AND E. M. GAYLE

WISHES TO ANNOUNCE TO THE PROFESSION THE OPENING ON NOVEMBER FIFTEENTH OF AN ADDITION TO THE INSTITUTION OF TWO BRICK BUILDINGS—ONE FOR MEN AND ANOTHER FOR WOMEN.

THE PLANT now consists of nine separate buildings situated in the midst of grounds which embrace eighty-five acres. The lawn is large and beautifully shaded; there are private walks and drives, and the institution affords the quietness and serenity of the country within sight of the city.

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Life in the out-of-doors, combined with properly selected work for each patient, constitutes an important therapeutic measure.

The three physicians live at the Sanatorium and devote their entire attention to the patients.

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Devoted to the Scientific Treatment of Organic and Functional Nervous Diseases.

A thorough, detailed, individual examination and study made of each patient. All the latest methods of psychotherapy employed—including psychoanalysis. Trained graduate nursing—large, airy, cheerful rooms—the seclusiveness of seventeen acres of wooded hills with lawns, orchard, and vineyard—wholesome food, cooked under supervision of a dietician—a congenial, restful atmosphere in an up-to-date building—air, water, climate and scenery unsurpassed.

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Situated in the suburbs of Memphis in a natural park comprising 28 acres of beautiful woodland and ornamental shrubbery. Modern and approved methods in construction and equipment. Sanitary plumbing, low-pressure steam heat, electric light, fire protection and an abundance of pure water. The elegance and comforts of a well appointed home. Rooms single or en suite with private bath. Facilities for giving Hydrotherapy, Electrotherapy, Massage, Physical Culture and Rest Treatment. Experienced nurses and house Physician. An improved treatment for Opium-Morphin Addiction.

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KENILWORTH, ILLINOIS

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Built and equipped for the treatment of nervous and mental diseases. Approved diagnostic and therapeutic methods. An adequate night nursing service maintained. Sound-proofed rooms with forced ventilation. Elegant appointments. Bath rooms en suite, steam heating, electric lighting, electric elevator.

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Consultation by appointment only.

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For the Care and Treatment of

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Building Absolutely Fireproof

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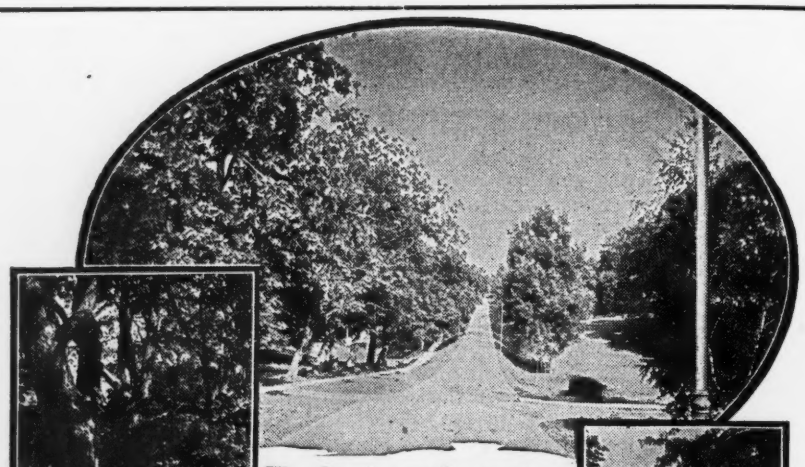

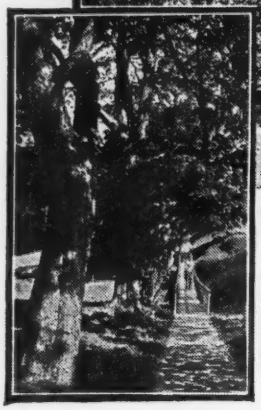

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For Mental and Nervous Diseases. A strictly modern hospital fully equipped for the scientific treatment of nervous and mental affections. Situation retired and accessible. For details write for descriptive pamphlet.

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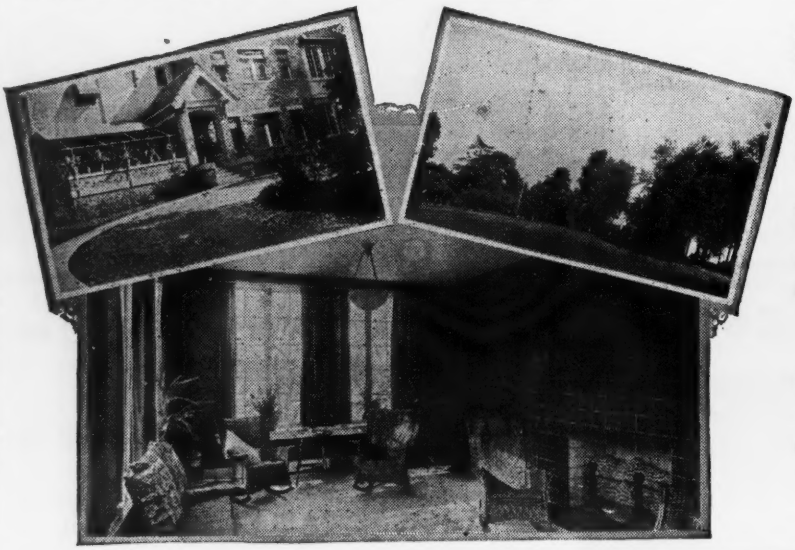

For purely nervous cases, nutritional errors and convalescents.

Completely equipped for hydrotherapy, massages, etc.

Cuisine to meet individual needs.

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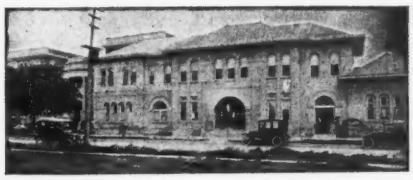
MARLIN, TEXAS



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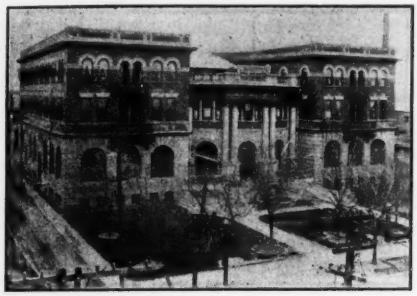

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H. S. Garrett, M.D., Urology and Syphilis
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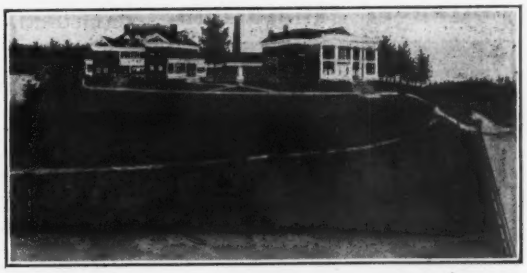

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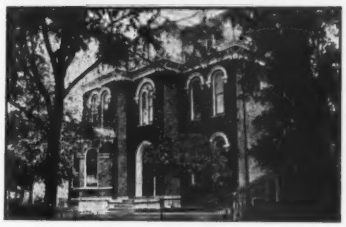

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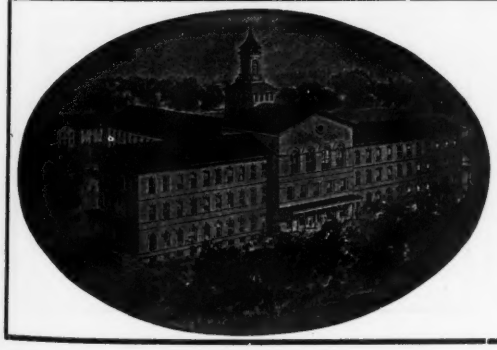

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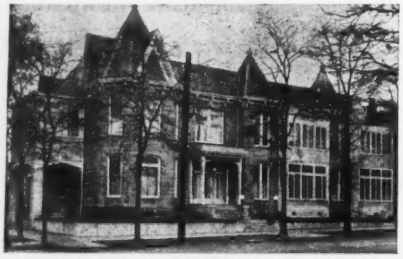

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Volume XVI SEPTEMBER 1923 Number 9

MEDICINE

INTERNAL DISEASES, PEDIATRICS, NEUROLOGY, DIAGNOSTIC METHODS, ETC.

DEAFNESS IN LATE CONGENITAL SYPHILIS*†

BY ALBERT KEIDEL, M.D.,
and
JAROLD E. KEMP, M.D.,
Baltimore, Md.

Although congenital syphilis was reported as early as 1529,[1] it was not until the middle of the Nineteenth Century that involvement of the eighth nerve was noted as one of its manifestations. In 1853, a non-suppurative form of deafness in children, accompanied by eye lesions, was described by Wilde,[2] but was thought by him to be due to scrofula. Within the next few years several authors reported a few instances of this type of deafness and correctly ascribed it to congenital syphilis. In 1863, a considerable series of twenty-one instances of deafness associated with congenital syphilis, in which the lesion was an affection of the bony or membranous labyrinth, were reported by Hutchinson.[3] He not only attributed the affection to the syphilitic process, but regarded it as characteristically an affection of the inner ear and one prone to appear late in the course of the disease. In this country, Turnbull,[4] in 1888, reported cases identical with those of Hutchinson and commented on the relative infrequency of this form of deafness in this country as compared with its incidence in Europe. The total number of cases reported in the literature up to 1907 was only 93, including those recorded by Poupelain,[5] who incorporated this total in a thesis covering the subject, with a complete review of the literature, which then contained 75 communications. Since 1907 this subject has not received the attention it merits. This is more especially true when one observes the desultory manner in which these patients have been studied.

Adopting a classification described by West,[6] we have studied in this series only those patients who are obviously the subjects of congenital syphilis, and who have become deaf as a result of this disease late in childhood or during early adult life. Patients with a similar symptom complex resulting from extension of an otitis media suppurativa, or secondary to involvement of the nasopharynx, are not here included. Patients with changes in the auditory apparatus present at birth are also not included, as these either die early, or, if they survive, become deaf mutes. Only two such cases have been discovered in our clinic.

The type of deafness which we wish to present is characterized by an onset which may be gradual or abrupt. The patients are usually at or about the age of puberty when the deafness first appears and in most instances they present other unmis-

*From the Syphilis Department of the Medical Clinic, Johns Hopkins Hospital. This clinical research has been aided by grants from the United States Interdepartmental Social Hygiene Board and from the American Social Hygiene Association.

†Read in Section on Medicine, Southern Medical Association, Sixteenth Annual Meeting, Chattanooga, Tenn., Nov. 13-16, 1922.

takable manifestations or stigmata of congenital syphilis. An antecedent interstitial keratitis is frequently noted in the anamnesis. Deafness may be complete or partial, but is always bilateral, although one ear is often affected to a greater degree than the other. Equilibration is rarely disturbed, and vomiting is unusual, although at the onset there may be tinnitus and occasionally nausea. The entire process may be a painless one.

The material from which these cases were selected consists of 230 patients with congenital syphilis seen in the Syphilis Clinic of the Johns Hopkins Hospital during the past six years. In this entire group there is a slight predominance of females over males and a marked predominance of whites over blacks. In this group of congenital syphilitics there were two instances of deaf-mutism, one of deafness due to extension of a gummatous condition in the nasopharynx, and 22 instances of late neuro-deafness, of the type just described. Late neuro-deafness, therefore, was found in approximately 10 per cent of the whole group.

A study of the race and sex incidence shows that in this clinic negro males are the most susceptible. In the order of susceptibility the negro male (12.5 per cent) is followed by the white male (10.6 per cent), the negro females (9.6 per cent) and the white female (7.5 per cent). The incidence for the negroes of both sexes (10.7 per cent) is higher than that of the whites (8.8 per cent), and that of the males of both races (11.2 per cent) is higher than that of the females (8.3 per cent). In these figures we disagree sharply with practically all other writers on this subject, particularly in that we find the susceptibility of males to be higher than that of females. Our 22 cases are divided equally between males and females, but in the whole group of congenitally syphilitic individuals there are four females for every three males.

The age of the patient at the time of onset is one of the striking features of the malady. In our series the extremes were 7 and 27 years. Dividing the interval of 20 years between these extremes into two periods of six years each and one of 9 years, we find that between the 7th and 12th years there are 6 cases, or 28.5 per cent; between the 13th and 18th years, 10 cases, or 47.6 per cent; and between the 19th and 27th years 6 cases, or 28.5 per cent. In other words, almost half of the patients are within the age limits of 13 to 18 years, the curve reaching its height between the 13th and 14th years. This is in exact accord with the observations of others, who universally place the age at onset as close to that of puberty.

The character of the onset was noted in 18 cases. In four it was sudden, the process being completed in one night in the case of one patient, and in a week or less for the other three. A gradual onset was noted in 14 patients, the process extending over from three months to fifteen years. The accuracy of the patient's statements relating to gradual onset is, however, open to question, because when they present themselves for treatment the date of onset is always remote. One patient, for instance, who was 42 years old when first seen, stated that he noted a beginning impairment of hearing at the age of 27, which had gradually progressed during the ensuing 15 years, until, at the time of the examination, he was found to be totally deaf in the left ear, with absence of bone conduction and diminished air conduction on the right. Owing to the difficulty of obtaining communications from without, these patients, when they have become completely deaf, have little if any supporting data for memorizing events, and the latter day statements of relatives or friends cannot for obvious reasons be depended upon.

Tinnitus was present in five of the eleven patients in whom the presence or absence of this symptom was noted, and is apparently more often associated with a rapid onset. It may disappear spontaneously, but there is no rule as to its duration. In one case it disappeared under anti-syphilitic treatment, but recurred after a lapse of treatment. Vertigo was encountered only four times among ten patients, but in only one was it sufficiently severe to disturb equilibration. Vomiting had occurred in only two patients and was a prominent symptom in only one of these.

In the physical examinations, signs of congenital syphilis other than the ear disturbance were noted in 91 per cent of the patients, with the Wassermann reaction alone positive in the remaining 9 per cent. Interstitial keratitis was present in 16 patients and was the most frequent stigma noted. In all but three of these patients the keratitis antedated the onset of ear symptoms by from one to twenty years, the average being from three to six years. A precedent interstitial keratitis is mentioned by practically all writers as a most striking feature of the anamnesis. This is not to be wondered at when one considers the extremely high incidence of this manifestation in congenital syphilis. Although deaf mutes are not considered here, it was of interest to note that in six patients of this series there was disturbance of speech. These were all patients whose hearing defect had been present from 15 to 20 years, though only two were completely deaf. It was noticed that their enunciation was poor, with a tendency to run words together. With one such patient it was necessary to have a relative familiar with the patient's speech defect to act as interpreter. There were five instances of Hutchinson's triad. Faulty dentition, including five additional patients with Hutchinson's teeth, saddle nose, perforation of the hard and soft palates, destruction of the uvula, and rhagades were noted with about the same frequency as for these lesions in congenital syphilis.

Involvement of cranial nerves in addition to the eighth was noted in only one patient, who had a slight ptosis of the left upper eyelid. The contention of some authors, notably the younger Fournier,[7] that cranial nerves are often involved in these patients "en bouquet" with the eighth was not confirmed. In not a single patient in our series was there any indication of an associated basilar meningitis, and of 12 patients whose spinal fluids were studied a complete absence of abnormalities was noted in eleven. The remaining fluid contained minor abnormalities which in themselves were not conclusive. In fact, careful laboratory studies of the spinal fluid and neurologic examination failed to justify the diagnosis of neurosyphilis (aside from the labyrinthine lesion) in any instance.

Otologic examinations were made of twelve patients, the results of which may be briefly summarized. In all a hearing defect in both ears was found to be present. There was complete bilateral deafness in seven. In the patients with incomplete involvement, the deafness varied from complete loss in one ear with partial loss in the other to unequal partial loss in both ears. In one patient with unmistakable inner ear involvement of both ears and complete unilateral deafness, there were associated extensive tertiary disease of the soft palate and a purulent inflammation of the eustachian tubes. These associated conditions healed under anti-syphilitic therapy without any improvement of the inner ear condition becoming apparent. Bone conduction was always found to be diminished, and in all but two patients air conduction was also decreased. The vestibular apparatus was damaged in every case, and in four instances there was complete absence of response to tests.

Illustrating the anamnesis, symptomatology and physical signs of late congenital syphilitic neuro-deafness, the following cases are typical:

Case I.—P. 148, December 15, 1921. Congenital syphilis; suppurative cervical adenitis; interstitial keratitis; destruction of nasal septum; perforation of the hard palate; bilateral deafness with tinnitus; blood Wassermann positive; spinal fluid negative; no improvement on treatment.

A colored female, aged 26 years, complaining of difficulty in hearing, gave a history containing the following positive and important negative points. One brother had congenital syphilis. The patient denied primary and secondary syphilis. At the age of nine years she had suppuration of the cervical glands and bilateral inflammation of the eyes with almost complete temporary blindness. Seven years later there was a purulent discharge from the nostrils which continued for two or three years. At the age of 19 years there was an incomplete loss of hearing of short duration with complete spontaneous recovery. The present illness began three weeks before admission with rapidly progressing loss of hearing, which had by this time become marked in one ear and almost complete in the other. There had been tinnitus since the onset. Blood Wassermann was positive and the spinal fluid negative.

On physical examination there were marked bilateral corneal opacities; complete destruction

of the nasal septum and a small perforation of the hard palate. The upper central incisors were widely spaced, but not notched. Right ear: only very loud shouts could be heard; all tuning forks were inaudible by air conduction except C2048; bone conduction was markedly shortened. Left ear: conversational tones could not be heard; all tuning forks were audible by air conduction except C128; bone conduction was shortened. Weber's test was referred to the left. There was no response to vestibular stimulation.

After ten weekly injections of arsphenamin, there was improvement in the patient's general condition, but no improvement in hearing.

Case II.—P. 146. November 8, 1921. Congenital syphilis; osteomyelitis of the ankle bones; saddle nose; ulceration of velum and uvula; destruction of supraorbital ridge; Hutchinson teeth; bilateral complete deafness; blood Wassermann and spinal fluid studies negative; no improvement on treatment.

A white man aged 21 years was admitted with the complaint of poor hearing. No history of syphilis in the family could be elicited, and primary and secondary syphilis were denied. At the age of five years he had a swelling of one ankle, which was diagnosed and operated upon as tuberculous osteomyelitis. A year later he developed a bloody purulent discharge from the nose and a destructive process of the right orbital ridge. Temporary blindness due to interstitial keratitis ensued at the same time. At the age of fourteen he became conscious of a hearing defect which gradually became more marked during the next seven years, until two weeks before admission it suddenly became much worse and was accompanied by tinnitus.

The positive points in the examination were complete destruction of the right supraorbital ridge with a deeply depressed scar; saddle nose; numerous bilateral corneal opacities; marked destruction of the velum and uvula; notched upper central incisor teeth; blood Wassermann and spinal fluid studies both completely negative; complete bilateral deafness; all tuning forks inaudible by air and bone conduction; no response to vestibular tests. There was no improvement following anti-syphilitic treatment.

Very little appears in the literature concerning the pathology of this interesting condition and the reports are for the most part conflicting. Some investigators have thought that the condition originates in subacute or chronic meningitis of the base. Autopsy findings are advanced to support this view.[8] The patients who came to autopsy, however, appear to represent still-births and congenitally syphilitic infants who died early; whereas, the patients who manifest eighth nerve involvement during adolescence can be sharply differentiated from such material. It would appear, therefore, that the same set of conditions cannot be said to be in operation pathologically in the two types, and this opinion is substantiated by our failure to demonstrate other clinical or laboratory evidence of neurosyphilis. Gruenberg[9] reports the finding of treponemes in the facial and auditory nerves of a seven months' fetus. Fournier[7] and others have found hemorrhage at the level of the termination of the acoustic nerve. Practically all observers have found an increase of connective tissue along the course of the smaller blood vessels of the labyrinth and periostitis of the bony labyrinth and of the bony canal through which the nerve passes.[10] Several observers have reported the absence of perilymph in the vestibule.[4] [11]

After the process is once established, treatment is of little avail and the prognosis is bad. If the patients are seen early before there is marked impairment of nervous function, further loss of function may be prevented. These patients, however, furnish a powerful argument in favor of the early, vigorous and sustained treatment of all congenitally syphilitic children, particularly those that survive the first year of life. The high incidence of interstitial keratitis in this group and the fact that it so frequently precedes the eighth nerve disease offers a chance for the early selection of a majority of these patients before the auditory apparatus is dangerously involved. Extensive late lesions elsewhere in the body, particularly of the bones of the head and of the bones and soft parts composing the upper respiratory tract, serve to mark the patients most likely to develop lesions of the auditory apparatus. But, after all, neglect of early treatment is the responsible factor in all cases, and it is in correction of this omission that the remedy is to be found.

SUMMARY

Twenty-two cases of deafness due to late congenital syphilis are reported. The incidence of this form of deafness is approximately 10 per cent. Males are more susceptible, particularly negro males. The age of onset approximates that of puberty. The onset may be sudden or gradual and is usually accompanied by tinnitus and vertigo. The symptom complex is

characteristic. Active manifestations of congenital syphilis other than aural lesions co-exist with or antedate the malady and are often of unusual severity. Of these interstitial keratitis is the most common. The blood Wassermann test is positive in over 90 per cent of the patients, and spinal fluid studies were invariably negative for abnormalities due to cerebrospinal syphilis. Cranial nerves other than the branches of the eighth are rarely involved. The prognosis is not good, and the results of treatment are poor. Adequate treatment of all patients with early congenital syphilis is advocated as a prophylaxis for late aural involvement.

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DISCUSSION

Dr. Lloyd Thompson, Hot Springs, Ark.—The most striking feature of this paper is the fact that so little evidence of any involvement of the nervous system was found. I certainly had been of the opinion that in these late congenital syphilitics we would find a large percentage with some evidence of neurosyphilis. This paper serves to emphasize the importance of thinking of syphilis in all obscure cases. Cases of oncoming deafness, beginning at about the age of puberty, should be investigated most thoroughly for any evidences of syphilis. This should include investigation into the parents, the brothers and sisters of the individual, and also a thorough investigation of the individual himself, both clinically and from a laboratory standpoint.

Dr. Keidel (closing).—The patients on whom this report is based are almost invariably about the age of twelve years. In the clinic from which they were collected we do not see early cases of congenital syphilis. There is no doubt that in the early cases of congenital syphilis involvement of the central nervous system is more prevalent than this number of ear cases would indicate, and that there is a higher incidence of involvement of the eighth nerve amongst the children up to the age of one year. They, however, die in a very high percentage of cases and are not studied.

VACCINES IN THE TREATMENT OF THE SECONDARY INFECTION IN PULMONARY TUBERCULOSIS*

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Nothing dismayed by past disappointments, many enthusiastic workers still hopefully await the day of the arrival of the specific which will prove curative of pulmonary tuberculosis. Despite some leads and a few hopeful lights that day is still far from us. But if our search has thus far proven fruitless, we have still discovered not a few remedial agents to assist in the conquest of the disease, or at least to ameliorate certain distressing symptoms at times, and thus aid in the general result obtained. Of aid in certain carefully selected and more carefully treated cases is artificial pneumothorax. Another and more occasionally helpful is the so-called autogenous vaccine.

Several years ago we held high hopes of success from the use of vaccines in tuberculosis and then with almost as sudden and characteristic a disappointment, we gave up their use, again demonstrating our well known professional proclivity to swing from one extreme of the arc of enthusiastic approbation of a new therapy to the opposite one of disappointed neglect of it.

This discussion today presents nothing new save an effort to review the situation in the light of the literature available to me with the hope of eliciting discussion of the merits, demerits, and position of a method of therapy which on exceptional occasions gives brilliantly successful results, but usually is disappointing.

The recent wide interest in the biologic sciences has naturally been reflected in

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tuberculosis therapy. Though the role of the mixed or secondary infection in tuberculosis is still moot to the point that no one yet has defined with precision its full extent, danger, and damage, all workers are more or less of the opinion that such an infection has an importance, greater or less. One point of agreement is that with the progress of the disease this infection is always present in apparently increasing effect. In stating this I am aware that practically all the symptoms and pathological changes commonly associated with secondary infections may occur as a result of tuberculous infection alone. With the progress of the disease, as has been shown by Pettit[1] and by Brown[2] and his co-workers, there is also an increasing incidence of secondary infection of the blood stream. And yet, so far no one has been able definitely to evaluate the part this secondary infection in lung and blood plays in symptomatology and pathology. One of the chief difficulties is that the bacterial flora of the sputum are changing from day to day and cultures of sputum from the same patient on successive days rarely give identical percentages of the various secondary organisms. Further, the cultivation of various strains of bacteria in the sputum is far from proof of the causal relationship of these bacteria to certain symptoms exhibited in the course of pulmonary tuberculosis, nor is their presence in the sputum an index of the severity of the infection.

Paterson[3] is inclined to attribute slight, if any, influence to the secondary infection in the progress of tuberculosis and expects very little help from the use of autogenous vaccines, which when they do help may do so from the non-specific protein reaction. Their special indication, according to this author, is a very profuse expectoration.

Pottenger[4] states that while mixed infection probably occurs at times, that it occurs as frequently as has been generally believed, is open to question. While he was formerly a staunch believer in mixed infection being an important process in all cases of advanced tuberculosis, he is gradually becoming more of the opinion that associated bacteria are comparatively an unimportant part of the pathology of tuberculosis.

Fishberg[5] is inclined to the belief that while mixed infections are very frequent in tuberculosis, the contaminating microorganisms are not responsible for most of the symptoms of the disease. He states:

"A phthisical patient may be infected with pneumococci, which produce pneumonia; influenza bacilli, producing grippe, etc. But this can no more be considered mixed infection than the association of phthisis with diphtheria, gonorrhea, etc.

"The streptococci, staphylococci, pneumococci, etc., which are often found in tuberculous cavities may, and often do, influence the symptomatology, course, and termination of the disease, but in incipient cases the microorganism which is responsible for the disease is only the tubercle bacillus."

Corper and Enright[6] concluded after the study of direct cultures, inoculation experiments and the saliva of normal individuals that the organisms in the sputum in pulmonary tuberculosis ordinarily play an insignificant part in the disease.

Norris and Landis[7] say:

"It is the belief at present that the formation of a cavity is due in large part to the presence of secondary infections with the various pus-producing organisms. These organisms produce a liquefying necrosis of the caseous areas and thus hasten their breakdown."

Hayes,[8] after a study of cultures from the lungs of patients coming to autopsy at Oteen, found the streptococcus hemolyticus and other organisms frequently in caseous areas as well as in cavities in the lungs. He thinks that these are probably factors in cavity formations which were very frequent in these autopsies because the hemolytic streptococcus was found in the caseation which precedes cavitation.

Brown and his co-workers,[9] after a study of secondary infection in tuberculosis made eight or ten years ago, conclude:

"The most frequent occurrence of positive blood cultures in febrile and ulcerative cases is due, we believe, more to the fact that such cases have more extensive and possibly fresher ulcerative pulmonary conditions. We have been unable to connect causally the positive blood findings with the fever.

"In conclusion, while we believe we can prove the occurrence of secondary invasions by various organisms, we have as yet been unable to convince ourselves that such secondary infections play constantly an important part in pulmonary tuberculosis."

Is the mixed infection in tuberculosis a true symbiosis of the other microorganisms with the tubercle bacillus wherever this bacillus may be present? Accepting the definition of symbiosis as a close association of different organisms essential for the producing of certain pathology or clinical symptoms, I hardly feel that it is a true symbiosis, as not one of these various secondary invaders is essential for the production of tuberculosis. They may fraternize with the tubercle bacillus or simply co-exist with it. Some may repress, others stimulate the growth of the tubercle bacillus, while it is quite possible they have no effect upon it. Certain symptoms such as high fever, rapid loss of weight and strength and harassing cough, may well be due to the mixed infection.

So with a full appreciation of the uncertainty attendant upon the use of the so-called autogenous vaccine (which for the sake of accuracy it might be mentioned is a misnomer and the better term might be bacterial antigen), one may well ask if there is justifiable ground for the use of these in tuberculosis therapy and if so under what conditions and restrictions. For this uncertainty extends as I have said all the way from a lack of definite knowledge of the role of the secondary infection in pathology and symptomatology to the proper making of a vaccine containing organisms in proper proportions to effect immune response and hence benefit the patient and be of no danger to him. Should there be definite information available as to what portion of the pathology and symtomatology in tuberculosis can be with certainty attributed to secondary organisms, the propriety of the general use of autogenous vaccines would be admitted, subject to the biological principles involved.

Again the recent development of non-specific protein therapy at once raises the issue, what part of the success of vaccine therapy is due to the non-specific protein reaction? Wright[10] has formerly been perhaps the most ardent exponent of the theory of specificity in vaccine therapy, but in the light of his recent work he states in his last paper on the subject available to me:

"We are, however, here considering primarily the question of principle; and in connection with this what is of fundamental importance is: that we should discard the confident dogmatic belief that immunization must be strictly specific. We should instead proceed upon the principle that the best vaccine to employ will always be the vaccine which gives on trial the best immunizing response against the microbes we propose to combat.

"I would point out that this would almost certainly not involve any revolutionary change in the accepted practice in either serum therapy or in prophylactic or ordinary therapeutic inoculation. But it would mean taking into account in cases which proved intractable to treatment with the homologous vaccine the possibility of seeking for collateral immunization by inoculating a microbe, or mixture of microbes other than that with which the patient is infected. The trial of this procedure might perhaps recommend itself where from the outset there is very little immunizing response to the homologous vaccine, and also where, as in long-standing cases of tubercle or streptococcus infection, the power of direct immunizing response to the corresponding vaccine is becoming exhausted."

The more common secondary invaders of the lungs in tuberculosis as shown by cultures from sputum are the streptococcus, streptococcus viridans, streptococcus hemolyticus, streptococcus non-hemolyticus, staphylococcus, strepto-pneumococcus, micrococcus catarrhalis; influenza bacillus, diphtheria bacillus, colon bacillus, and possibly other cold-producing organisms not readily recognized. It should not be forgotten that nearly all of these micro-organisms have been found in the mouths of people apparently in good health. Some careful observers have maintained that by methods of thorough washing of the sputum cultural results will be considerably diminished and the number of organisms grown which can with assurance be stated to come from a pulmonary or bronchial habitat reduced almost to the vanishing point.

As Weaver[11] has well pointed out, streptococcus vaccines should always be autogenous, inasmuch as the various strains of streptococci differ among themselves in essential immunological peculiarities. A polyvalent streptococcic vaccine active against all types of streptococci would of necessity have to contain so many strains as to make it practically

valueless, because this multiplication of strains would necessarily so reduce the content of the essential one as to render it therapeutically inert.

In my experience, vaccines from one of the streptococcic strains have given the most satisfactory results. Possibly this was due to the specific immune response, and possibly to the benefit of the leucocytosis frequently associated with this type of infection. According to Petersen, the streptococcic vaccine does not seem to be a good agent for non-specific stimulation, while for this purpose the staphylococcus vaccine is more useful. Is the benefit, then, of the combined streptococcic and staphylococcic vaccine the result of streptococcic specific and staphylococcic non-specific reaction?

So far as I have been able to learn, there have been published no comprehensive blood counts in connection with autogenous vaccine therapy in tuberculosis. In view of the quite frequent leucocytosis which may reach a considerable height found in those cases in which the streptococcus is a common secondary invader, it would seem worth while to direct thought to the possible implications here presented. Results in such cases carefully treated are usually more gratifying than in cases without a leucocytosis. May not the white cell count prove of value in determining the use of an autogenous vaccine and also possibly be a guide in dosage?

Minnig[12] reports benefit from autogenous vaccines as follows:

	Imp.	Stationary or Worse
Pneumo-streptococcus	3	4
Pneumococcus	3	5
Streptococcus	11	11
Streptococcus viridans	2	1
Streptococcus hemolyticus	15	7

The author further noted improvement according to stage of disease as follows: 8 out of 9 cases, first stage, benefited; 10 out of 12, second stage; and 15 out of 42, third stage.

Pettit[13] reports on 280 cases in which he used autogenous vaccine with the idea of preventing hemorrhage and had such encouraging results that he believes he is justified in using them "in a large number of cases as a protective measure" against hemorrhage. What other benefit accrued to the patient save an apparent lessening in the chances of hemorrhage he does not state.

Bonney[14] is quite properly conservative in his estimate of the value of autogenous vaccines, and while admitting that he has had some encouraging results from their use fails to state in what type of mixed infection he had the greatest success. He feels that certain febrile cases failing of response to the usual conservative measures of bed rest, etc., offer perhaps the best field for their use.

Since the sputum of the tuberculous patient contains several strains of bacteria, autogenous vaccines must necessarily be subject to the hazard of improper percentages of the contained organisms, thus making dosage and interpretation of results quite difficult. And further, as Bonney[15] says:

> "It is entirely possible that owing to modifying influences pertaining to the dose and to important changes in the invaders incident to environment and adaptation, certain constituents of the vaccine may later become not only useless but actually harmful by prolonging the negative phase and lessening individual resistance."

Unfortunately the difficulties here cannot be overcome by the opsonic index or the complement fixation test with any degree of uniformity for the existence of an intercurrent complication might easily vitiate it. It may be impossible to conclude that a positive test from one organism gives definite information that this is the offending agent in the infection. Is it not quite possible, as has been suggested by Babcock in a discussion of asthma, that one of the potent causes of the failure of the autogenous vaccines in tuberculosis is the fact that the autogenous vaccine as ordinarily used is invariably made from aerobic growths while it is quite possible anaerobes may be the offending organisms?

The group which in my experience is most apt to receive benefit from them is the moderately or far advanced case with considerable moisture and profuse expectoration, usually bilateral, with or without some fever, that fails to respond to the routine measures of therapy and management, and in whom it is difficult to restore lost weight. The case in which persistent fever of not very great extent cannot be

overcome by the usual methods may also present a hopeful field, though here possible foci of infection must be rigorously rooted out beforehand.

This, then, does not leave a very large field for the use of the bacterial vaccine in tuberculosis therapy. I think it well in this era of more or less enthusiastic vaccine administration to warn against the indiscriminate use of vaccines in tuberculosis, although the warning may well be in the nature of supererogation to this body. The case in which it is to be administered must be chosen with great care after thorough study, and only after the usual conservative measures of treatment have failed. "The cure" does not exist in a vaccine. Again, in evaluating the effect of the vaccine it is well to remember constantly that the psychic boost of specific therapy may well play a part in the patient's improvement, as may also a more meticulous cooperation on the part of the patient who perhaps through discouragement has become more or less lax in his observance of the proper rules of treatment. And again, in our present state of knowledge, we have no guarantee of the permanency of improvement under the use of one vaccine whose benefit may be quite temporary and then vanish, while its successor may or may not be successful.

I have purposely omitted any discussion of the so-called stock vaccine. I can think of no good reason for its administration save the necessity for work under conditions in which the making of autogenous vaccines is an impossibility and the only available vaccine is the stock, and unless one indulges in the hope that the non-specific protein reaction is the essential factor of benefit in vaccine therapy. This may be the case when not too violent a focal reaction has been excited. Present-day conceptions make it fairly safe to assume that a non-specific injection usually within twenty-four hours will frequently light up with a focal reaction any circumscribed inflammatory process irrespective of its bacterial etiology or its location. Wolff Eisner[16] has recently pointed out that of these various processes, tuberculous lesions are perhaps more sensitive because of a more profound sensitization of the tissue cells of the host against protein in general. This immediately brings to thought, then, the dangers of a method of therapy which, while applicable with benefit to the stimulation of a chronic inflammatory focus, in the case of the tubercle offers a hazard of disorganization of the connective tissue capsule sufficiently to cause extension of the process and irreparable injury. Whatever the theoretical probabilities, focal activation in tuberculosis, whether therapeutically induced or not, is hazardous.

In just what percentage of cases to use the autogenous vaccine, I am not prepared to say. Those of us whose fortune it is to have patients out of the more congested city districts are very commonly impressed with the remarkable and rather general disappearance of secondary organisms from the sputum. And when used, my own results have been of only sufficient encouragement to cause me to persist in their use with considerable conservatism and modified hopefulness of their efficacy. During recent months I have used the method in only 17 cases with beneficial results in two cases and temporary benefit in one other. Vaccines made from the streptococcus group combined with the staphylococcus seemed more beneficial.

If, then, these vaccines are of benefit in tuberculosis, how do they help? I suspect no one today is rash enough to discredit the fact that antibody immunity is a vital factor in protection against infectious diseases and in overcoming actual bacterial infection. Specific immune response, then, presupposes specific infection. The therapeutic effect, however, of the non-specific reaction would seem to be largely independent of the specific antigen-antibody balance whether we accept Weichardt's "omnicellular plasma activation" as the true explanation or Starkenstein, Wright's or Petersen's[17] theories. The benefit, then, may well be a combination of both specific and non-specific reactions.

At times serious damage has resulted to the patient from the use of autogenous vaccines, and yet when properly administered there is no great danger from them.

Minnig[18] emphasizes the necessity for small dosage at the beginning of the treatment and begins with as low as five or ten millions. I have never found it necessary to start with less than fifty millions, although I concur in his warning to increase the dosage slowly. Too early repetition may catch the patient still in the negative phase with the very probable danger of a reaction as manifested by a chill or chilliness, considerable rise in temperature, malaise, discomfort or oppression in the chest, sweating, prostration, etc. This is best combated by a large dose of atropin immediately. A failure of satisfactory response to the vaccine as manifested by symptomatic improvement after a sufficient length of administration should cause its discontinuance, as should the aggravation of existing symptoms provided these are not caused by injudicious or enthusiastic dosage or too early repetitions, matters adjusted by the application of the proper rules of dosage. The interval between doses should never be less than three whole days, rarely longer than seven, with five as the safest medium. A complicating acute infection should necessarily be a contraindication to the use of an autogenous vaccine. I have had no experience with this method in stage one cases, and think that as routine in these it is strongly to be condemned, although exceptions may be made occasionally.

Before closing I wish emphatically again to state my position that autogenous vaccines should never be used in pulmonary tuberculosis as a routine measure. They are of very limited value and should be administered only to selected cases free of demonstrable foci of infection which have been sufficiently studied to warrant the attempt at specific therapy and in whom the usual routine conservative measures have failed. They should never be used to the exclusion of these measures, and if reliance is put upon them with disregard of more essential matters a great deal of damage will result. The dose should be carefully calculated and an attempt at a general reaction of serious nature should not be made. Persistence in their use after a fair and honest trial in the individual case without improvement on the patient's part should be sufficient ground for discontinuance.

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DISCUSSION

Dr. Louis Hamman, Baltimore, Md.—Such experience as I have had with the use of vaccines in pulmonary infections inclines me to view this method of treatment with utter distrust. I have treated only a few instances of pulmonary tuberculosis with vaccines. My experience has been almost entirely with other types of pulmonary infection, chiefly the type commonly spoken of as chronic non-tuberculous pulmonary infection. In the cases that have been under my observation I have seen no benefit from vaccines. It is therefore a pleasure for me to have listened to the fair and very conservative presentation that Dr. Cocke has given. I should like to over-emphasize the conservatism.

There is a tendency in some quarters to lay entirely too much emphasis upon secondary infection in tuberculosis, and to try to persuade one that the cardinal symptoms of phthisis are due to the secondary infection and not the tuberculosis. This view is unwarranted. You may be assured that the tubercle bacillus and its effects are the essential factor and the secondary invaders relatively unimportant.

Dr. Cocke has pointed out the possible effects of vaccines as specific antigens and as foreign protein. If the effect is a reaction to foreign protein, then it matters little what organism is employed. If, on the other hand, a specific influ-

ence is desired, then there is great practical difficulty in obtaining a proper vaccine. Sputum cultures are sometimes misleading in so far as they do not always reproduce the pulmonary flora. I have seen a sputum culture of almost pure influenza bacillus when lung puncture gave a pure culture of pneumococcus. If a number of organisms are found in sputum culture it is impossible to prepare an altogether satisfactory vaccine. The unreliability of sputum cultures is further illustrated by the frequent changes in flora. I have seen from one patient a predominating pneumococcus sputum culture change after a week to a predominating influenza bacillus culture without any apparent change in the patient's condition and certainly without any important change in the underlying pulmonary disease.

I cannot refrain in conclusion from saying a word about the difficulty of appraising the value of any treatment in pulmonary tuberculosis. The natural course of the disease untreated is so varied and uncertain that it is extremely difficult to gauge the effects of treatment. That some patients improve and others grow worse is the common mark of all treatments. You know how frequently premature enthusiasm has already led the profession to disillusionment. There is no objection to trying different treatments in tuberculosis unless they serve, as is often the case, as an excuse to neglect those simple well-established principles that are the backbone of successful tuberculosis therapy. Dr. Cocke has found sufficient promise in the vaccine treatment of the secondary infection in pulmonary tuberculosis to feel encouraged to continue his studies.

Dr. L. J. Moorman, Oklahoma City, Okla.—I hoped Dr. Cocke might bring out some new points with reference to the diagnosis of the presence of mixed infection. There may be a question in the minds of many physicians as to what role the secondary micro-organisms play in the course of pulmonary tuberculosis. Is there any way to determine when mixed infection is present and when it is not present? Pathological studies have revealed cases of pulmonary tuberculosis with cavities, and yet no evidence of mixed infection. Clinical experience would indicate that it is most difficult to determine the presence or absence of mixed infection. May I cite two examples?

A young female with advanced tuberculosis had all symptoms of extreme toxemia, which Dr. Cocke gave as an indication for the use of vaccines. While the question of inducing artificial pneumothorax was being considered in this case, there was a spontaneous pneumothorax and the patient experienced all the symptoms of extreme shock, such as high fever, rapid pulse, pain, difficult breathing, and so on, with development of fluid in the pleural sac which was nonbacterial, and pneumothorax was instituted a few weeks later, and some of the fluid withdrawn. This patient is apparently making splendid progress toward recovery.

About the same time I had another patient with identical symptoms, with practically the same degree of pathology in the chest so far as could be determined, who had spontaneous pneumothorax in the course of an artificial pneumothorax, with purulent infection, and death. Are we justified in assuming that in the first case there was no mixed infection, and in the second case there was mixed infection? These questions are difficult to answer.

For several years I have had a differential white blood count on all my cases. Invariably in the closed tuberculosis case we get a normal leucocyte count with a lymphocytosis. As soon as tubercle bacilli appear in the sputum we get a moderate leucocytosis with a normal differential count. May this be accepted as evidence of mixed infection? We also have about the same blood picture in non-tuberculous pulmonary infections, including the bronchiectatic cases, which might be taken as further evidence that this finding tends to indicate a mixed infection. Our great difficulty lies in the fact that we have no definite way or ways of determining when mixed infection begins and when it terminates.

I thank Dr. Cocke for presenting to us such a conservative paper on the use of vaccines in connection with pulmonary tuberculosis, because people all over the country are running wild on the subject of vaccines.

Dr. R. E. Flack, Asheville, N. C.—We are aware that there is a toxemia which may develop in the course of tuberculosis. Patients developing it may be put to bed and carefully watched and treated, but the fever persists. In some of these patients it is found that an associated infection stands in relationship to the fever, as the fever often subsides or is materially reduced after the administration of a suitable vaccine. It is our experience that the pneumococcus organism is found more often as a secondary invader.

There is no doubt that the field of vaccine therapy is limited, and the cases that yield to vaccines, if not followed carefully after a few weeks' time will have relapses. We have followed these cases in our laboratory and have checked them up with complement fixation. The blood serum of all patients treated with pneumococcus vaccine gave very strong complement fixation. Taking complement fixation as an index of immunity, one must conclude that the immunity acquired by the administration of pneumococcus vaccine is short-lived, as in three weeks after treatment the blood serum is only slightly positive. To maintain a maximal degree of immunity, it is advisable to continue the vaccine every week to prevent a recurrence of the mixed infection.

In some cases we lose the effect of vaccine therapy for the reason that the vaccine is discontinued too early, especially in cavity cases. If you once get rid of a mixed infection, within six weeks, during the season of the year when catarrhal inflammations are most prevalent, it may recur. For this reason, as stated above, it is well to continue the administration of a suitable vaccine.

Dr. Virgil E. Simpson, Louisville, Ky.—A clear conception of the difference between an infection which is limited and producing few clinical phenomena, and one which is producing marked symptoms in the way of febrile change, would lead to a logical conclusion as to whether or not vaccines are of a great deal of help in any condition, whether it be so-called mixed infection of the pulmonary structures conjointly with tuberculous involvement or not.

I have long since come to the conclusion that in purely localized infections, where the body at large is not being called upon to manufacture antibodies to any great extent, if at all, vaccines are helpful. These are essentially chronic and localized conditions. In a generalized infection, a bacteriemia, characterized by temperature processes, by rapid loss of strength and weight, and other evidences of a febrile process, vaccines are in the main useless. It is an entirely different proposition in administering to these cases vaccines and sera. In one case there has been a demand made on the vital powers of the individual to manufacture immune bodies; he is already the subject of bacterial attack and is failing to revive under the assault. In the other case you introduce with the serum ready-made antibodies which either are inimical to the growth of the offending germ or aid in the neutralization or destruction of the toxins; the patient is but a passive subject benefiting from the product of vital reactive processes of the animal from which the serum is obtained. Vaccines are for chronic, localized infections and prophylaxis; sera for acute, systemic infections and prophylaxis of a short-lived nature. This statement may well be considered axiomatic in specific therapy.

It would seem unnecessary to emphasize the statement that stock vaccines are not scientifically used unless identification of the causative organisms is established. Even then their values must be less than that of autogenous vaccines since strains of bacteria vary.

Stock vaccines in mixed pulmonary infections are of doubtful value and autogenous ones seldom produce good results.

Dr. J. T. Wolfe, Washington, D. C.—For the past seven years I have been interested in vaccine therapy. In the beginning of my work along this line I discarded entirely the theory of immunity in a patient by what would be a specific vaccine.

In examining the sputum of a tuberculous case I was struck with the vast number of pus cells. To my mind they represented dead soldiers. It occurred to me if we could call out more soldiers that these soldiers, white cells, leucocytes, polymorphonuclears particularly, would attack anything in sight, any invading organism of whatever nature. Working on that hypothesis, I found that the diplococcus pneumoniae gave a higher leucocyte count in an infection. For quite a time I used a combination of the streptococcus and diplococcus pneumoniae vaccine, and then later I added to it the Fraenkel bacillus and staphylococcus. I have treated 600 cases of chronic bronchiectatics, acute bronchiectatics, and tuberculous cases. I have had some amazingly gratifying results in tuberculosis. Some in children, running a temperature with definite lesion of the lung, have cleared up absolutely and have remained so for years. These children are now attending school, have no fever, and are apparently well.

I remember the case of a woman, 71 years of age, who ran an evening temperature of 104°. I put her on vaccine therapy before I put her into an institution. When she arrived there her leucocyte count was 19,000. In a few weeks her temperature was normal and she returned to her home in Virginia, where she resumed her household duties. Her cough had stopped. Under the microscope tubercle bacilli had disappeared. All mixed infection and pus cells disappeared from the sputum.

I remember another case of a man whose sputum was laden with tubercle bacilli. Gradually the tubercle bacilli and streptococci disappeared from his sputum.

This work has been based entirely on the theory of building up and following up the white cells, and not that of injecting more of the same type of toxin into the body with which the patient was already overburdened.

Dr. R. McBrayer, Sanatorium, N. C.—We are doing tuberculosis work among a class of people who cannot afford good doctors, and who therefore come to our state sanatorium. We see surprisingly frequently patients who give a history that they have been slowly going down hill until they dropped in to see Dr. So and So, who said: "You must take a vaccine for that." The patient says, for example, that she took a vaccine at 11 o'clock and at 4 o'clock in the afternoon her temperature was 104°. Dr. Cocke's conservatism is certainly very timely. You must remember that you have tuberculosis to deal with. It is not a secondary infection that is making the patient primarily sick. It may be a contributing factor or it may not, but you must not do anything that will aggravate the tuberculosis that is there.

I know one very eminent pathologist who says that the tubercle bacillus is not at all proteolytic. Does it produce these cavities or not? Maybe the secondary infection did. That is a problem that must still be worked out by conservative men.

There are other organisms in the sputum to contend with. Other than the pallid spirochete, they are difficult to differentiate from each other. They are to be looked after as we go along. Sometimes, as you all know, we see a case with very diffuse tuberculosis throughout one and a half of the lungs. This we can determine by physical examination. The history is definite.

You look at the x-ray and it aids you in making the diagnosis. The patient may be afebrile, feeling pretty good, not far from normal in weight, and not very toxic. Another patient whom you can arbitrarily classify as incipient tuberculosis so far as actual pulmonary involvement and symptoms are concerned is very sick. What is the difference?

Dr. W. R. Kirk, Hendersonville, N. C.—In speaking of the dangers of the administration of vaccines, we should take into consideration the possibility of the sensitization of these patients, especially when we do not know with just what organism we are dealing. That is one of the dangers. I have had the experience of producing asthmatic symptoms in some patients after the indiscriminate administration of stock vaccines, and now never give them when an autogenous vaccine is available.

Dr. Cocke (closing).—I knew Dr. Hamman's position when I asked him to discuss my paper. I want some definite, absolute stand taken on this for two reasons: one of which is the fact that the biological houses are scattering widespread all over the country literature regarding vaccines, and detail men are going around with these vaccines, carrying them in their grips for general distribution, and if anybody has a cough or sneeze or any expectoration they think these people have to have vaccines.

Patients come to us by the dozen who want a "serum," and it is on account of the indiscriminate use of vaccines by certain physicians in pulmonary tuberculosis work that this paper was prepared and presented. I tried to emphasize by the very few cases in which I have used vaccines, and the very poor results obtained, that they should be used in these cases only after a complete failure of the usual conservative measures. I do not use them until I am convinced I have to do something radical. Just as a very careful study and selection of cases must be made before the introduction of artificial pneumothorax, so must one be sure in his choice of a case suitable for so-called vaccine therapy.

I cannot answer Dr. Moorman's question with regard to the leucocytes. I can give him an impression only, as I have not the figures at hand.

With regard to the advisability or not of administering typhoid vaccine as a prophylactic measure in incipient or suspected tuberculosis, my own experience is limited in that respect, as we have not much typhoid. My experience leads me to believe that if you give a typhoid vaccine so as not to cause a focal reactivation, there is practically no danger.

While the question of protein therapy in tuberculosis is a very interesting one, it should still be guarded by every possible care, since the dangers of focal activation are so great in this method of treatment. Therefore, I condemn the routine use of vaccines in tuberculosis.

A PHYSIOLOGIC AND PHILOSOPHIC STUDY OF THE RELATION OF SLEEP TO BODILY NUTRITION*

By George M. Niles, M.D.,
Atlanta, Ga.

"Let me have men about me that are fat,
Sleek-headed men, and such as sleep o'nights."
—Shakespeare's "Julius Cæsar."

That the devout Psalmist sang "He giveth His beloved sleep;" that old Homer exclaimed "Sleep is the gift of God;" that the poet Young wrote of it in his "Night Thoughts" as "Tired Nature's sweet restorer," and also

"Man's rich restorative, his balmy bath,
That supplies, lubricates and keeps in play
The various movements of this nice machine,"

that Depew calls it "The solvent of longevity, health and work;" while the late Henry Clews, the financier, said, "Sleep means everything to a man—good health, good looks, will power, and self-confidence;" that wise men from Socrates to Russell Sage have advocated one-third of the twenty-four hours in bed—all these expressions show a deep appreciation of this restful attribute among all ages and conditions of human thought.

Sleep, as a "balm to hurt minds," has been thoroughly threshed out by the neurologists, and, as a desideratum in all acute and continued diseases, it will be found mentioned on nearly every page of the various works devoted to therapeutics.

As to the actual influence of sleep on digestion and nutrition, however, there is some conflict of opinion, and in this article the writer will endeavor briefly to cover the subject in a manner helpful to those interested in practical dietetics.

It is a well known physiologic fact that the elimination of carbon dioxid and absorption of oxygen are diminished during sleep, mainly because the muscles are less active.

Tigerstedt places the comparison of metabolism between the sleeping and waking state as 100 to 145, but claims it to

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be dependent upon cessation of voluntary movements;

"for it may reach as low a level in the waking condition, if the muscles be completely relaxed and every voluntary motion suppressed."

While other secretions are diminished during sleep, this does not apply to those of the digestive apparatus.

"It is sometimes stated that the digestive secretions are diminished during sleep, but the statement does not rest upon satisfactory observations, and may be doubted" (Howell).

"Sleep does not exercise the least influence on the secretory work of the gastric glands" (Winfield Hall).

Also the writer has many times listened over the intestines of sleeping individuals and noted peristaltic activity continuing with unabated regularity.

No one would deny that a baby thrives best, and puts on weight most rapidly, when he can sleep soundly after each full meal "from the maternal fount." It is a frequent custom among those who perform arduous physical labor to take a sound nap during the noon hour immediately after eating; and some of the finest specimens of muscular development observed by the writer have been those who retired promptly after eating a hearty supper and just as promptly went to sleep.

As to the movements of the stomach and intestines during sleep, those movements are to all intents and purposes as active as during the waking hours, less the stimulation of extraneous impressions produced by muscular exercise or play of emotions. Some physiologists claim that gastric and intestinal mechanisms are abrogated during sleep, but Dr. W. B. Cannon, in reporting some of his investigations upon animals, writes:

"It is worthy of note that nearly all the animals curled up and slept during the time between observations; nevertheless the progress of food through the intestines continued. The statement is also made that at night, even without sleep, the intestines are almost entirely at rest; that this is their normal time for repose. I have seen both large and small intestines actively at work, however, from half past 9 until half past 10 at night." These statements the writer has several times personally verified.

One qualification should in fairness be allowed, and that is the lessened influences of the reflexes during sleep, especially deep sleep. The following from Landois, while not entirely in accord with some of the conclusions just drawn, calls attention to the diminution of reflex action, affording a basis for practical deduction later on:

"During sleep there is a reduction in the activity of gastric and intestinal movements and in the secretions, which indicates a lessening in the activities of the respective nerve centers, and the diminished reflexes indicate a lessening of the activity of the spinal cord."

With the last statement the writer is in accord, but the preponderance of proof would permit us to assume that during sleep the gastric and intestinal secretions are poured out with unabated freedom, and that the mechanics of digestion progress in an orderly manner. We must not, however, lose sight of the decided psychic influence for good or ill exercised during waking hours. That pleasurable sensations may augment the flow of gastric juice, even when no food reaches the stomach; or that disgust may check its secretion has been amply proved by Pavlow and others. The fragrant cigar after a savory meal, coupled with peace of mind and pleasant society, lends a psychic aid to digestion which is entirely absent when the reflexes are dulled by sleep. Again, that fear may cause peristalsis is only too well attested by many of our war veterans, who feelingly remember their "hurry calls" on the eve of their first battle.

Another point to consider is the motor power of the stomach. The writer has found that in four out of seven tests with a barium meal, where the stomach would barely empty itself in four and a half waking hours, it was not quite empty if the subject observed had been asleep part of the time. This number is too small to be conclusive, but it is strongly suggestive of the role the waking senses may unconsciously play in assisting this viscus to perform the mechanical part of its task.

When the brain is alert, the reflexes are on guard and the voluntary muscles are at work, each department of the human economy is calling for its quota of innervation and blood. These different departments are exacting their tribute from the constructive forces and turning over to the excretory organs the products of combustion and waste. During this period

the digestive department can only draw a "working interest," not being permitted to put away any appreciable surplus until the day's activities are ended. Sleep stills the voluntary movements, decreases the carbon dioxid output, and makes the least demand on the involuntary vital mechanism. It is then that Nature, our industrious handmaiden, begins her constructive housekeeping.

"She does it in an orderly cooperative way, following a regular method of work in repairing waste, actively forming new tissue, and giving just the proper amount of care and nourishment required to all parts, both mental and physical in regular sequence."

When Shakespeare wrote of fat men who sleep o'nights he recognized a principle patent to every one; for those who sleep much, thereby allowing the plentiful recuperation of both body and nerves, are generally rotund and cheerful. Dickens' fat boy so characteristically portrayed in "Pickwick Papers" might be cited as a "near-classic" illustration that there may be as much truth in the injunction, "Sleep and grow fat" as the old saw, "Laugh and grow fat."

It must not be understood that the writer advocates heavy meals at night, or articles of food calculated to tax the propulsive power of the digestive canal. In the young and vigorous, where the muscle fibers are elastic and the nervous system unimpaired, little fear need be entertained that a meal will be cared for at any hour, though habitual overindulgence in eating at unseasonable times, like any other abuse of the bodily functions, will enact its toll of punishment sooner or later. In the aged, however, or those with sluggish motor force, or hyperesthetic nerves, it is best not to place too much work on the stomach and intestines during the hours allotted to sleep.

A certain amount of food in the stomach, the digestion of which, in drawing from the brain a portion of its blood, keeps busy the nerve centers concerned and indirectly quiets other nerve centers which otherwise might exert a wakeful influence. Many sufferers from insomnia well know the happy effect produced by drinking a glass of hot milk or cocoa or eating a light repast just before retiring.

The following are some general suggestions as to dietetic recommendations in relation to sleep:

The young infant cannot get too much sleep, and this is best attained by filling his stomach at stated intervals.

Vigorous, growing children, and those engaged in manual labor thrive on a full breakfast and lunch, these two meals containing most of the daily quota of proteins. The evening meal may be plentiful in quantity, but should consist of such articles as bread, milk, cereals, eggs, fruits, etc., which do not unduly stimulate the nerve centers by their metabolic products. Soups, rich extractives and solid proteins also cause the bladder to be filled with urine, rich in waste products and very acid, this being a factor worth considering.

Those who labor with their brains, or skilled artisans whose crafts demand mental tension with but little muscular effort, will find their efficiency best subserved by a light breakfast, a slightly more plentiful lunch, and, at the close of the day's work a generous meal, provided that after it two to four waking hours are allowed, so that the psychic reflexes may have an opportunity to contribute their share to the processes of digestion.

For the leisure class, those human butterflies who keep late hours and are perhaps the votaries of Terpsichore, Bacchus, or Venus, it is advisable to take a light repast in bed at 10 to 12, a hearty dinner at 5 to 8, and a moderate supper, with not too stimulating or alcohol-containing beverages at 11 or 12.

The foregoing suggestions are intended to be elastic, requiring such changes as may fit individual habits or environments, and the thoughts herein are offered as a small contribution to an interesting and not too well understood subject.

DISCUSSION

Dr. Julius Friedenwald, Baltimore, Md.—It might be of some interest in connection with Dr. Niles' paper to call attention to some observations made by me some years ago regarding the effect of rest, sleep and exercise upon gastric digestion.

(1) Under normal conditions the secretory as well as the motor functions of the stomach are not interfered with during rest. During sleep

after meals, however, the secretory function remains normal, but the motor function is slightly disturbed.

(2) In cases of hyperchlorhydria with normal motor function, the acidity is reduced and the motor function remains normal while resting, whereas during sleep the acidity remains about the same and the motor function is impaired.

(3) In conditions of hyperchlorhydria with motor insufficiency the acidity is lessened and the motor function impaired during rest, whereas during sleep the acidity is still further decreased and the motor function still further impaired.

(4) In conditions of hypochlorhydria with normal motor activity the acidity seems to be increased and the motor function remains normal during rest, whereas during sleep the acidity is increased and the motor function is disturbed.

(5) In conditions of hypochlorhydria with diminished motor activity the acidity seems to be increased and the motor function improved during rest, whereas during sleep the acidity remains about the same and the motor function is interfered with.

From these observations it appears that in conditions of gastric disturbances accompanied by hyperchlorhydria and hypochlorhydria and in motor disturbances of the stomach, the gastric digestion is improved during rest, but impaired by sleep after meals.

Dr. A. W. Calloway, Asheville, N. C.—Dr. Niles mentioned exercise as one of the things to induce sleep, but he did not emphasize it as much as I thought he would. Patients require rest the first hour or two after a meal. Fatigue toxin is supposed to induce sleep, whereas Austin toxins cause insomnia. It is said that Napoleon Bonaparte suffered with gastric ulcer and was a poor sleeper, and while awake he planned his battlefields and battles. I have noticed that after a hard week of fishing or hunting there is complete relaxation and a period of sleep follows. I do not believe we can accentuate too much the value of active exercise and sometimes extremely active exercise in producing a condition of sleepiness.

Dr. Tom A. Williams, Washington, D. C.—I wish to exhibit myself as an illustration of congenital insomnia, having had a great deal of experience in dealing with cases of insomnia. I have been extremely interested in this subject, having studied the causes of insomnia in a great many cases, including my own, that of my father and own boy, all of whom are insomniacs. I have had about three hours' sleep in two nights while attending this meeting. We know that some people will sleep on a full stomach and others will sleep on an empty stomach, and still others can be made to sleep by exercise. Other people remain wakeful by exercise, and still others remain wakeful on either a full or an empty stomach.

There are rudiments of logic laid to the state of Napoleon's stomach which have nothing to do with sleep. There must be something else. For instance, a warm bath will induce sleep in some people, whereas in others a warm bath creates wakefulness. We know that in states of intense nervous excitement, as before some great ordeal is to take place, men will be unable to sleep, and the reason may not be psychic. It may not be because these men worry about their problems.

Dr. Crile reported an observation made during the war at Mons, and a great many French physicians observed the same thing, that some of the men slept for thirty-six hours after their retreat, as for two weeks they had practically not slept. Some of the men slept through surgical operations, requiring no anesthetic.

Persons in a state of hyperthyroidism sleep very badly. They sleep in the morning perhaps, but it takes hours at night before they go to sleep. There are a great many other observations that might be made in the same direction. Hence my own general thought is that sleep is a function controlled metabolically through the endocrin system. It is a function of hyperproduction or hypoproduction of the endocrin substances that have to do with what Crile has called the "kinetic drive." When the kinetic drive is on, you cannot sleep. You must quiet the kinetic drive before you can sleep. Any procedure which tends to suppress or quiet the kinetic drive will lead to sleep, and a procedure which stimulates it will lead to wakefulness.

Speaking of my own case, I have to be quieted down before I can sleep. Hence, I sleep most soundly in the morning. I cannot sleep at bedtime unless I have tranquillized myself in the evening.

Dr. Seale Harris, Birmingham, Ala.—This subject is of great practical importance to physicians who are dealing with digestive diseases, because unquestionably the amount of sleep that one has and needs has a great deal to do with good digestion. In other words, it is emotional disturbances, as a rule, that prevent sleep; and we know that emotional distrubances affect the various secretory organs, and particularly the endocrin glands, including the suprarenals.

Perhaps some of you may have read the articles by Cannon on the emotions, in which he called attention to the fact that laboratory animals in a state of pronounced fatigue could not move their muscles; and that the injection of a very small amount of adrenalin would immediately restore the muscular functions. I am thoroughly convinced that loss of sleep has much to do with the adrenal function.

Another thing I have not seen brought up before is the probable effect of caffein upon adrenal secretion. I am assuming its effect from Cannon's experimental work in connection with stimulation of the adrenal gland. When you are fatigued, if you take a glass of Coca Cola, or a cup of water, it will enable you to attend to your duties and you feel practically well. Now, caffein is one of the greatest and best drugs we have to counteract fatigue, but used regularly it is doing great harm.

We do not know what sleep is. Some man has likened the human body to an electric storage battery. Some years ago I had an automobile which was run by a storage battery. When I put the batteries on charge and let them stay on all night the next day the car would run all day, but if I got the batteries only half charged at night, the batteries would go down before the end of the day. As long as the batteries were in good condi-

tion and properly charged, I could get along all right. When the batteries began to run down I would get a short circuit and the batteries would go down suddenly. It is much the same with the human body.

Since we now believe that the electron is the basis of all matter, it may be that the mechanism that rearranges the electrons has something to do with sleep, and the electrical reactions may have something to do with it.

As a practical proposition, I find many patients who suffer from digestive disorders because they do not get enough sleep. An important question we ask every patient is, what time do you retire? What time do you get up in the morning? How many hours of sleep do you get? The regulation of the lives of our patients is a very important function. When they get a sufficient amount of sleep they are not so apt to be troubled with disturbances of digestion.

As to sleep in relation to eating, Cannon has brought that out in his expermental work on animals. There is an inclination for animals to sleep soon after eating. Dr. Williams mentioned his own case. The best thing I do every day is to take an afternoon nap. I have a heavy meal in the middle of the day, and then I lie down for thirty minutes and sleep twenty-nine of them, and I awaken much refreshed. I have been doing that since I was a student at the University of Virginia, and I am uncomfortable when I do not get this sleep unless I take caffein in some form, such as coffee or Coca Cola. I find my efficiency is increased considerably by getting that rest.

I find a great many patients who do not sleep well at night because they become excessively fatigued during the day. I find that I do not sleep so well at night when I have missed this thirty minutes rest during the day.

As to the toxins of fatigue, a normal amount of toxins produces sleep. Too much exercise or excessive fatigue produces wakefulness and increases nervousness. If we will see that our patients get sufficient sleep, it will improve their digestion.

In the matter of duodenal ulcer, nearly all patients with duodenal ulcer give the experience of waking at 2 or 3 o'clock in the morning and of having pain at that time. In the early stages of duodenal ulcer this wakefulness in the early morning hours is a suggestion that there may be hyperchlorhydria.

Dr. Crile found in laboratory animals that when the adrenals were removed a large number developed duodenal ulcer. Several years ago I called attention to the fact that duodenal ulcers developed in patients in a state of chronic fatigue, so that the observations of Crile on removal of the adrenal gland tally with those of my own, and I believe the adrenal gland may have something to do with the function of sleep.

Dr. George L. Echols, Milledgeville, Ga.—Kant suffered with gout. Kant was an unusually brilliant writer. Personally he was much humiliated because he could not sleep on account of this gout. As the loss of sleep weighed heavily on his mind, he proceeded to write on the subject of sleep, and I believe that is the real origin, the first scientific thought in regard to sleep that influenced the medical profession. After Kant died, Wetherstrand, of Berlin, a young physician, saw that his brother physicians were turning down a certain class of patients as not being worthy of consideration. Of course, you know the class I am referring to. He was influenced by the writings of Kant on sleep.

About that time the subject of hypnotism was brought forth. Wetherstrand made attempts to produce artificial sleep, as he saw sleep was one of the main troubles with the discarded class among his brother physicians at that time, and he thought he was getting somewhere by producing artificial sleep. The doctor who works along the line of producing something new, especially for a discarded class who are neurotics today and psychotics tomorrow, is trying to benefit humanity. Wetherstrand failed and died a young man.

In Berlin another man came on the scene who had high emotions, Sigmund Freud. Freud did not take very well to the iron clad way, and after working in Paris for a while he took up Wetherstrand's idea of producing artificial sleep, and found in attempting to produce artificial sleep by hypnotism that he was able to get into the lives of his patients. They talked to him freely and told him of their troubles in life from a psychogenic point of view. Thus we have the School of Freud. We are not all Freudians. The Freudian School took up other ground, and the field is now being well worked. The lesson to be drawn is that this movement had its origin in man's study of the state of sleep.

Dr. Henry C. Clark, Falmouth, Ky.—In the first twenty years of my practice I could go to sleep riding horseback, and I have done it many times, but after you have passed the age of 50 you cannot lay aside your cares so easily, and as long as you have anxiety and things to worry you, sleep will not come. It is true, the use of drugs may help, but not as much as one would think. One should do those things that will bring real rest, and if you have real recreation you will have no trouble in sleeping. I have practiced along these lines for many years and find that I have very little trouble in getting sleep.

Dr. Niles (closing).—Byron went all through life suffering from insomnia.

Old Sancho Panza, after a strenuous session with Don Quixote, covered himself with his cloak and had a long sleep, and when he got up and stretched himself he said, "God bless the man who first invented sleep."

We all feel grateful for that restful attribute in treating our patients as human beings. Anything we can do to help them sleep, to get away from the troubles and stress of daily life, will benefit them. Those who have the least trouble and the least worries sleep best.

"Tired nature's sweet restorer, balmy sleep!
He, like the world, his ready visit pays
Where fortune smiles—the wretched he forsakes."

But to look at it from another side,

"Early to bed and early to rise,
It is all very well for sick folks and guys,
But it makes a man miss all the fun till he dies,
And join the stiffs who have gone to the skies.
Go to bed when you please, and sleep at your ease,
For you'll die just the same with some Latin disease."

EFFICIENCY OF THERAPEUTICS*

By W. R. Houston, M.D.,
Augusta, Ga.

In discussing the question of advancing therapeutic effectiveness I shall limit myself to its economic aspects. An important way of estimating the value of the physician's labors lies in reckoning the number of working days that his efforts have added to the communal accomplishment. It is true that much of his task is to alleviate and to console. We esteem the worth of energy spent in bringing comfort, but for this worth there is no measure. We are, however, justified in inquiring into the economic value of the physician's labors.

Economists and statisticians, by a general consent, have arrived at the figure $100.00 as representing the average value of a human life per annum to the community's wealth. The lives of infants and the infirm constitute a liability, of course, rather than an asset, but this figure includes the entire population. The average length of life in the registration area was in 1870, 25.2 years. In 1922, it is given by the United States Census Bureau as 55. In five decades there has been an increase of 30 years in the average length of life, or of $3,000 in the value of each individual in the community. For the population of 108,000,000 we arrive at an increment in the national wealth of $324,000,000,000, or sixteen times the national debt, an amount on which the interest at 5 per cent would suffice to give each doctor in the country an income of $15,000 a year.

In 1909, 13 days was considered to be the annual loss from illness per person. This has now been reduced nearly one-half and this represents an annual saving that is equal to about three times the total value of the cotton crop.

Just how the causes of these gains are to be distributed and just how the relative contributions to the resultant sum are to be appraised cannot be known with precision. Decrease in tuberculosis mortality has added about 3½ years to the average life with a relative decrease in the number of sick days. Decrease in infant mortality is a very large factor. Saving one infant who attains average age increases the average longevity as much as saving ten persons of the age of 50. These are splendid and heartening results. We cannot reflect, however, on our own daily work in relation to such achievements without being impressed by the idea that most of these gains have not been brought about by direct action. It is not our response to the calls that the sick make on us that has prolonged so greatly all these lives and banished all this sickness. The gain has come about certainly through the application of knowledge that originated in the medical profession. Most of it has come through the general diffusion of this knowledge. "In our Century," said Pasteur, "science is the soul of the prosperity of nations and the living source of all progress. What really leads us forward is a few scientific discoveries and their application."

The most important work of the internist is educational. The greatest demand on his time and strength is in the cause of educating people. What is the worth of a physician to the community may be answered by asking how effective is he as an educator. All day he is teaching mothers to care for the young. He is instructing the cardiopathic, the arteriosclerotic and the diabetic in the rules of hygiene and dietetics. He is re-educating the neurotic. He is instituting in the home of acute infection the practices of cleanliness, quiet and proper nutrition. He teaches largely by the best of all methods, example, and as the examples multiply his task grows easier. Each pupil becomes a focus of enlightenment for others. It is not nearly so hard as it once was to teach a typhoid that he needs food and not medicine, to induce the tuberculous to rest and the diabetic to diet.

If, then, we pause to consider how we shall make our therapeutics more effective, we must ask ourselves how we shall make our teaching more effective. The doctor is from his name a teacher. He

*Read in Section on Medicine, Southern Medical Association, Sixteenth Annual Meeting, Chattanooga, Tenn., Nov. 13-16, 1922.

cannot drive people into what he thinks best. He can only enlighten their self-interest. But he enjoys the tremendous advantage of teaching a subject which, for all their prejudices and misconceptions, they are most eager to understand.

The following are the points of view which I believe to be of most importance to emphasize in our relations with our patients:

(1) That we are less doctors of medicine, persons to whom one applies for a specific remedy for the cure of his ailment, than councilors concerning health. Therapeutics teaches the method of adjusting oneself to a limitation. In a few instances there are specific means of doing away with the handicap altogether. But in most instances it is a question of rearranging the life of the patient so that he may most successfully combat or make terms with his limitation.

(2) It would be greatly to the interest of our patients if we would lay aside any pretension to originality in the advice that we offer. The tremendous advantages that have accrued from the standardization of medical schools and the standardization of hospitals can most advantageously be sought by the internist through the standardization of his methods of treatment. We often hear that treatment must be strenuously individualized. While there is a degree of truth in that, a far more important truth is the need of definite standards of treatment. The belief is justified that our patients would fare better on the whole if all of us treated diabetics exactly as Dr. Joslin does, if we treated nephritics exactly as Dr. Christian does, if we treated pneumonia as Dr. Cole does, malaria just as Dr. Bass advises, tuberculosis according to the teachings of Dr. Lawrason Brown. It is my belief that much aimless groping and ineffectual effort might be spared if we had standard methods of treatment laid down for all the ordinary infections, typhoid, pneumonia, scarletina, diphtheria, etc. Like the standard treatment which has been so advantageous in the cure of malaria, there might be set down what constitutes an irreducible minimum for sound practice of other diseases. Committees from a body like this might formulate in the briefest words the few uncontested essentials of our present knowledge as a basal requirement of practice. This would be the safe, ready guide for the legions of every-day practitioners. It would not, of course, infringe upon the field of the few original investigators.

In educating our patients as to what they may properly expect from the physician, we shall gradually bring them to understand the important problem of when they should consult him. They will insensibly learn that the "ounce of prevention" is worth more nearly a ton than a pound of cure. They will learn as regards the physician what they have already learned regarding the dentist: to consult him at stated periods without waiting for the ache which demands relief. The insurance companies, which have been a tremendous factor in the education of the Nation in health matters, are finding it to their economic advantage to have a most thorough overhauling of their policyholders annually or semi-annually. Individuals will not be slow in perceiving that a similar course will be even more to their personal advantage.

(4) There is a great need of more faith as to the possibility of educating people to receive the very highest standards of advice that we can give. The idea that we are obliged to humor people with placebo is a barrier to progress. The grave serious wrong of needless drug-giving, however harmless the drug may be, is that it diverts the patient's attention from grasping the real issues. The readjustments in his way of living that are essential are neglected in favor of taking the drug which is of little or no importance. It is often remarked that it is agreeable to have a patient in the hospital because there we are not obliged to give medicine. As a matter of fact, if we, in the matter of acute infections, write out painstakingly the details of nursing and diet as these are carried out in the best hospitals, we will find people quite content to follow this plan of treatment. Our yielding to the demand for drugs is more the result of a serious lack of energy on our part than because of the patient's insistence on drugs.

It is not, however, in treating the acute infections that the most successful efforts of therapeutics are seen. With a few striking exceptions such as malaria and diphtheria, the acute infections are very little influenced by medical efforts. Beyond establishing a well-ordered nursing routine and proper dietetic measures, along with such palliatives for pain and discomfort as the occasion may suggest, the physician's main business is to look out for surgical complications. Neither the mortality nor the duration of the sickness is likely to be influenced greatly by therapeutics. It is in dealing with the chronic diseases of internal medicine that the highest skill of the therapeutist is required, and it is here that his greatest opportunity lies. It will require nice discrimination to determine how far he needs to call in the aid of the surgeon to remove foci of infection and other handicaps to health that lie in the surgeon's domain. After all that is done, however, there will remain a great mass of persons, constituting, according to statistics that became available since the late war, a great proportion of those that have reached middle adult life, for whom an enormous amount can be done if we can succeed in securing their intelligent cooperation. These are the patients somewhat impatiently referred to by active practitioners as "old chronics."

An overwhelmingly large proportion of the failures in treating chronic diseases are failures of morale. These failures are not most often due to diagnostic error. Successful treatment does not flow inevitably from correct diagnosis. They are not due to false conceptions of the general course to be followed. They are due to failure of the patient's will and the physician's stimulating influence. The tuberculosis patient, when his disease is nearly arrested, loses interest. The diabetic wearies of his diet and the syphilitic, when the always-diminishing factor of fear has subsided, tries to forget his doctor and his mercury. The morale of the doctor is often as frail as that of the patient. He would like a new problem to solve. He finds it difficult to maintain the aggressive enthusiasm with which he first attacked the case. He must still crack his whip over the lazy patient's back to make him pull up the hill to cure or comfort.

It would be too sanguine to hope to eradicate the inevitable and inherent frailty of human nature. The plan so popular in Europe of taking yearly an intensive six weeks' cure at a watering place is a helpful adjustment to this frailty. Yet I have found two procedures of great value in attempts to overcome this, the most formidable of all barriers to therapeutic success. The first is the keeping of a card index follow-up, by the use of which at the appointed month and day the patient is reminded by letter or 'phone to report for a review of his case. This plan is of especial value with the milder diabetic and tuberculous cases. The patients do not suspect the physician of endeavoring to create business for himself. They generally show a lively appreciation of the interest taken and are grateful for the impulse given to their flagging zeal. Curiously enough, men respond more readily to an appeal made to the economic value of their health capital and its conservation than they do to arguments based on the enjoyment of life and health. This puts in their hands their own familiar measure of values. The second means of estimable value in maintaining the morale of those having chronic disabilities lies in having them keep a health book. In this book the physician first writes down in detail the plan of treatment to be followed and furnishes an example of the kind of notes that are to be kept day by day. I have found that wherever a patient can be induced to be faithful in keeping this book the best results possible in the case may be expected. It is astonishing what excellent and informing records we often get in this way, records that would put many hospital charts to shame. Especially with psychoneurotic patients the system and method which the bookkeeping brings to the disordered mind is a most salutary and saving influence. The cures which are accomplished by the patient's own efforts in the home environments are far more stable and lasting than those made in the artificial and pampering atmosphere of the hospital. The

patients acquire strength from having proved themselves sufficient to solve their own problems.

Summarizing, then, I would say that to make the therapeutics of internal medicine more effective we need to emphasize, above all, the educational aspects of our work; to teach our clients what they can properly expect of physicians; to standardize our methods of treatment; to teach preventive medicine in chronic diseases; to study ways and means of maintaining the morale of the patients by giving them acute cure periods and by following them up and inculcating the systematic methods of the hospital in their private homes. The day is long past when the doctor was merely the lackey to my lord's bladder and bowels. For therapeutic effectiveness we must have an exalted sense of leadership and a disdain for any yielding to the demands of ignorance and prejudice. The evangel that we spread in quiet ways by council and demonstration, the evangel of scientific enlightenment, has done and is capable of doing more to ameliorate men's condition than any agency now at work.

DISCUSSION

Dr. Virgil E. Simpson, Louisville, Ky.—It has been said that medicine is a science that somewhat heals, that often relieves and always comforts. If that be true, and I take it in the main it is true, we can never get away from the purely personal relationship that must and should obtain between the patient and the doctor. I do not believe that in the essayist's plea for standardization he had in mind the disturbance of that relationship, but rather he tried to emphasize the necessity for what he very aptly phrased the irreducible minimum. It seems to me, if the medical profession would from time to time take stock of some of the things which constitute the irreducible minimum in the management of cases that present themselves to us in our daily work, we would find much less of the heretofore apparently unescapable differences of opinion that confront us not only in medical society meetings, but in consultation work in the patient's home.

This paper would serve an equally good purpose if presented as a part of a public health service, county, municipal, state or national. The only danger that one sees in a doctor's attempting the role of educator is that we have unfortunately a not negligible per cent of men and women in the medical profession who are themselves not stable, who tend to become faddists, and the faddist as a medical man or medical woman is very dangerous. One may become obsessed with the idea that his duty consists in the management of any condition, and he may become so highly specialized that he fails to realize there are other causes of complaints, other symptoms of diseases than those which are referable to the particular part of the human body to which he has attached himself. Every man should steer clear of the tendency to ride hobbies which will exclude from the clear field of vision some of the things that are quite as essential as those which constitute the hobbies.

I believe one of the most important things that the medical profession should undertake to do in establishing this irreducible minimum is to try to educate the public along the lines of preventive medicine. It is of great importance to the members of a patient's family for us to render such scientific aid as may tend to restore, as soon as possible, the individual to health, but we render larger service to the community in which we live if we prevent children from developing diphtheria instead of administering all the aid we may to the one who has become stricken. The physician occupies an anomalous position. The public seeks and accepts his advice when ill, but looks askance when he advises it how to stay well. His voice is, indeed, one crying in the wilderness when he talks preventive medicine, a labor entirely altruistic save to the salaried health officer. These latter can do much good, but they tend to become faddists; they become prone to minimize therapy in an emphasis of prevention. Either extreme should be avoided.

Dr. Seale Harris, Birmingham, Ala.—Weir Mitchell relates in his book on "Doctor and Patient" that one of his patients asked him, "Doctor, how would a doctor two hundred years ago have treated a case like mine?" Dr. Mitchell went to the library and got all the books he could find that were written by doctors two or three hundred years ago, and he found that doctors at that time gave specific directions regarding the daily routine of the patient and diet, and he concluded that the best doctors of all time are those who regulate the lives of their patients so that they may be restored to health and continue to remain in health.

Dr. Houston brought out the importance of regulating the lives of patients. Of course, diagnosis is important, and we have not gone too far in making diagnoses, but the criticism has been made that a doctor will spend three or four hours in making a diagnosis and only three or four minutes in telling a patient what to do.

It is very important to get specific information regarding the patient's daily life. We should have routine questions to ask patients for this information. If you have not you will overlook important things that may have brought on the condition. We must find out the cause of the condition and then attempt to remove it. Too often we find loss of sleep is an important cause of this or that condition. We should ask patients what time they retire, and how many hours they sleep. Overwork or chronic fatigue is the most important predisposing cause of many of the acute infections as well as chronic diseases, and it is an important matter to know how many hours' work these patients do. Women who work fifteen or eighteen hours a day cannot get well until they are taught how much work they can do each

day. A thorough anamnesis is very important, and a thorough diagnosis is important to get the confidence of the patient, and when you have finished the diagnosis it is important to remember that you have a patient who knows nothing of personal hygiene or very little, and you must teach that individual how to live so that he can be restored to health and maintain health.

A great deal may be done in regard to educating the public before it becomes ill. The doctor of the future will be the man who examines people before they are sick, and after an early examination instructs them how to live.

We are very fortunate in having with us this afternoon the director of the Life Extension Institute, of New York, Dr. Fisk. This institute is doing a wonderful work to educate the public to the importance of having semi-annual examinations. I move that the privileges of the floor be extended to Dr. Fisk.

Dr. Eugene L. Fisk, Life Extension Institute, New York, N. Y.—We have heard the word diagnosis mentioned many times. It is one that I do not like very much. We should study the individual, his body and his life, and with a clear picture of the whole before us counsel him. In this way we have the best possible protection against the faddist. In our own profession, in preventive medicine, we have the faddist. Too much emphasis is often laid on one phase of hygiene, diet or exercise. When we analyze people for the purpose of preventing disease, carefully examine their bodies and lives periodically and dispassionately for the purpose of prolonging life, and not for the purpose of making a diagnosis to treat a particular disease or ailment, experience shows a definite reduction in the death rate.

Some of you may have seen a recent cartoon issued by the Life Extension Institute, in which every type of worker in medicine and hygiene is pictured as having his own place in the fighting line against disease, and another cartoon expressing the opposite idea of the faddist or quack, the man with a medical fad, or the quack with a purely commercial fad, claiming his own method as a cure-all. Some of these health fads are splendid things in themselves and within their legitimate field. There is always an element of truth in every fad. We must seek that grain of truth, wherever it may be, and then arrange a well balanced program for an individual in which each measure is carried out in right proportion.

Mention has been made of gains in longevity. Most of the gain has been under the age of five. We have added about eighteen years to the expectation of life at birth in the past Century. In twenty years we have had a most wonderful gain, but mostly among the younger ages. There has been no extension of human life or increase in the expectation of life at the age of 50. The so-called degenerative diseases have been on the increase. Following the influenza epidemic there was a temporary reduction, but these are again on the up-grade, and there is the most important field of work. We must begin in prenatal life and so on through natal life in adolescence and adult life to correct the troubles we meet in middle life. I believe the essayist is right in predicting that the physician of the future will be a health councilor, and his task that of life adjustment. But he may have to examine a whole family before he can adjust an individual member of it.

Dr. D. C. Walt, Little Rock, Ark.—The education of the patient is as necessary for satisfactory results as any other part of the doctor's work.

We must not forget the fact that we are animals and subjected to the same natural law as all other animals. We are disturbed more by civilized law than any other animal. We need more care each day than any other animal, and we usually get less. We should study health as well as disease.

The idiot has an appetite, taste and hunger. Regardless of our intelligence, if we don't use it we place ourselves in the same class as the idiot. We should feed and drain more to effect than by weight and calories. It is each day's active care (everything else being equal) that makes the best horse, the best farm, the best railroad, the best business and, necessarily, the best man.

THE MENTAL DISEASE PROBLEM*

By George L. Echols, M.D.,
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Milledgeville, Ga.

In recent papers on this subject, I have tried to stress the problem by referring to a few facts, such as:

(1) More than one-half of the hospital beds of the country are occupied by individuals suffering from mental disease.

(2) About 50 to 60 per cent of the inmates of penal institutions are suffering from mental disease or defect of some form or type.

(3) Of the ex-service soldiers now hospitalized, one in three is a neuropsychiatric patient.

(4) From one-tenth to one-fifth of every state's expenditures is for the support of mental hospitals.

(5) There are more mental patients in our public institutions than there are students in our colleges and universities.

(6) The individual and family economic loss from mental disease can hardly be estimated.

(7) A person requiring hospitalization from a neurosis or psychosis is just as

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much incapacitated and has a disease just as real as another person with a fractured leg, pneumonia, typhoid or tuberculosis.

We are face to face with a problem of vast importance, economic, social and humanitarian.

In May, 1921, Massachusetts amended her law relative to the examination of applicants for registration as physicians by adding psychiatry. Thus her State Board examinations include mental diseases along with the other subjects such as anatomy, physiology, pathology, obstetrics, gynecology, surgery, etc. This amendment goes into effect in July, 1923.

Every state in the Union will follow the above example, and is there any special reason for delay? Last school term, "only five medical schools in the United States were giving instruction during the pre-clinical years in the processes of the mind and their modification in disease."

With the above amendment in force, all our medical schools would necessarily give courses of instruction in mental disease with as much thoroughness as their courses in medicine, surgery, obstetrics, etc. This would result in one or two generations in a medical profession in which all doctors, regardless of specialty, would have a reasonable working knowledge of mental diseases.

At present those familiar with mental diseases are a few specialists in mental and nervous diseases in the larger cities and those on the medical staffs of mental hospitals, private and public, the latter including the larger portion of the group. The patients seen in our mental hospitals are usually of an advanced type who have committed some unusual act or had an episode necessitating commitment. Practically all our literature on mental diseases is from studies of the fully developed psychosis. Even in the advanced stage much can be done for the patient. But our great hope in the mental disease problem lies in preventing the psychosis or curing it in its earliest stages.

In private correspondence dated September 26, 1922, Dr. C. Mcfie Campbell, Director of the Boston Psychopathic Hospital and Professor of Mental Diseases at Harvard, advised the writer as follows:

"The great progress in the practical handling of insanity will lie, not so much in elaborate studies of the end product, but in the general diffusion of psychiatric knowledge among the general profession, so that the patient will receive some sort of treatment months or years before the present stage at which they usually receive treatment."

This leads us to a consideration of the pre-psychotic and early psychotic periods. The paper read before the 1922 meeting of the American Psychiatric Association by Dr. Douglas A. Thom[1] shows that these tendencies can be observed in some cases even before the usual school age; and as I understand from the discussion, the phobias, neuroses and psychoses of childhood are going unnoticed and with little or no consideration. At the above mentioned meeting, a paper by Dr. George E. Hyde[2] shows that in a survey of more than fifteen thousand school children, 1 per cent of the school population were classed as nervous and excitable. It is further pointed out that the moron can be recognized before the period or age of delinquency. The studies of Dr. A. F. Tredgold[3] indicate that the mentally deficient is twenty-six times more liable than the normal to develop mental disturbance. Perhaps future studies will demonstrate that one of the great fields in preventive medicine lies in proper psychiatric studies of school children. The big idea is to prevent the nervous, unstable, excitable or feeble children of today from becoming the psychotic adults of tomorrow. And a great question is, how can this group be prevented from propagating their kind into the coming generations? Our daughters are not only not being educated to become good mothers, but are being educated in such a way as not to become mothers at all. The bulk of our future generation must come from the feebler element of the race which propagates rapidly, thus sowing the seed for more feeble-mindedness and mental disease. Just how much industrial disturbance is due to early and unrecognized mental disease can be determined only by future psychiatric indus-

1 and 2. American Journal of Psychiatry, July, 1922.

3. Tredgold, A. F.: Mental Deficiency. Wm. Wood & Co.

trial studies. In the beginning of this paper we mentioned the relation of our problem to penal institutions and the deplorable feature is that the defect is usually not noted and no steps are taken to prevent the individual from committing the crime.

Time permits us only to mention organic lesions. Ten per cent or more of our population are syphilitic. Syphilitics are potential neuro-syphilitics, and every neuro-syphilitic is a potential case of mental disease. Syphilis is preventable. What is true of syphilis is true of many other organic lesions and certain toxins which lead to mental disease.

The public must be gotten away from the fatalistic and pessimistic impressions of mental disorders. It must be led away from the old asylum idea and be given a vision of the hospital for mental disease. We must get away from the thought that an individual is insane or crazy, and regard him as mentally sick. We as physicians must grasp the truth that there are many types of mental diseases, and that they are about as treatable as physical diseases.

Some of the present methods are nothing short of deplorable: jails and asylums, and to reach the latter, the mentally sick has only one route—police station, sheriff, jail and court. If a man is mentally sick or has a psychogenic or organic trouble, his disease is as real as nephritis or tuberculosis. He is by the law branded as crazy, taken in custody by an officer, passed through a court or commission trial to make his incarceration legal; and by the time he reaches the institution physician he is suspicious, non-cooperative and rebellious. The institution physician is burdened with two or three times as many patients as he should have in his care, and this usually necessitates hurried examinations. At stated intervals the patient is re-examined and his conduct noted. The patient is left to a great extent to associate with the chronic insane, and he naturally loses hope and interest.

There should be established mental clinics in the large cities, and certainly an out-patient department at every state hospital. With our improved facilities for rapid travel, why not let the patient be brought or come voluntarily to the mental clinic or out-patient department where he can be examined, observed and his troubles talked over, to receive expert advice as to rest, treatment, commitment, etc. The recoveries in these mental clinics would be surprising. In case a commitment is advisable, let it be voluntary as far as possible. Let the patient come into the mental hospital with the full realization that he is mentally sick and the great consideration is mental improvement or mental recovery.

At present most of the attempts to treat mental disease are in institutions, private and public, but this is little more than an attempt to salvage the human driftwood at the mouth of the river. My plea is for a medical profession to prevent the young timber from falling into the headwaters of this horrible stream of mental disorder. What can be done, time and work will tell.

Dr. Osler became interested in this subject in his late days, and in the eighth edition of his book on "Principles and Practices of Medicine," one-third of its pages was devoted to nervous and mental diseases.

William James, Professor of Psychology, became enthusiastic and made the statement:

"If I were a millionaire with money to leave for public purposes, I would endow insanity exclusively."

Harvey Cushing recently said:

"There is nothing which is possibly of more concern to the Nation than a knowledge of the mental disorders to which its citizens are subject."

Listen to the inspiring words of Henry Van Dyke:

"To prevent the spread of mental disease and to reduce the number of insane in our country is a work of the highest and most patriotic service."

William H. Welch, Johns Hopkins, says:

"The greatest need is for improved care and treatment of early and curable cases of mental derangement and of borderland cases which can be prevented from passing into the insane state; also for better instruction of students and physicians in psychiatry."

In conclusion, my plea to the medical profession is to take up the study of mental diseases. Buy text books on the subject, study the mental disease problem,

and help lay the foundation for a medical profession, one or two generations from now, that will have a working knowledge of the subject. Mental disease is on the increase, and the longer organized efforts to deal with mental disorders are deferred the greater will be the problem.

SUMMARY

(1) Mental diseases is a staggering problem, economic, social and humanitarian.

(2) Mental disease is apparently on the increase.

(3) A person requiring hospitalization from a neurosis or psychosis is just as much incapacitated and has a disease just as real as another person with a fractured leg or pneumonia.

(4) The most treatable and curable stage is in the pre-psychotic and early psychotic periods.

(5) It is the family physician and the specialist in every specialty who sees the patient in the above-mentioned treatable and curable periods.

DISCUSSION

Dr. R. C. Swint, Milledgeville, Ga.—We cannot divorce mental problems from physical problems. We must learn to study the human organism as a whole. We owe a great debt to modern physiology because of the emphasis it has placed on the interrelationship between the different organs; for instance, the relationship of the functional activity of the lung and the heart to respiration and circulation, etc.

The question of prevention takes us into the domain of eugenics. We have to consider the problem of the prenatal life of the child. We have to consider the problem of the child in the preschool age. We have to consider the problem of the child in school life. There is the question of habit training in childhood. There is the question of the individual after school life. We send our children to school, we stuff them with information pie, and they develop mental indigestion, but we do not spend much time in our curricula in teaching our children how to meet the problems of life from their instinctive standpoint; how to adjust themselves when difficulties come up. The question of mental diseases taxes the capacities and resources of the medical profession as no other specialty does. For an individual to be a successful psychiatrist, he has to be a well-rounded, well trained man. We do not expect the general practitioner to become a specialist in mental diseases, but what we should do is to so formulate our theories and ideas in relation to these things that it will be within the grasp of the general practitioner to understand the behavior disorders as manifested in the types of personalities that are predisposed to mental disorders, so that through their early recognition these cases may be apprehended and given the proper treatment.

Dr. M. L. Graves, Galveston, Tex.—After years of experience, starting twenty-five years ago with the superintendency of one of our state institutions for the care of the insane, I have no faith in any solution of these problems except from a scientific standpoint. Governmental and political domination of the institutions devoted to the care and welfare of the mentally defective and mentally diseased presents, except, here and there, in rare and exceptional cases, no real work of a constructive character. Little work that tends to give us any adequate explanation of the etiology of mental diseases comes from these institutions.

Twenty years ago or more I was informed that Dr. Osler had urged that the American Medico-Psychological Association should constitute itself a scientific section of the American Medical Association in an effort to connect its administrative work with a larger degree of actual scientific work in the endeavor to solve the mental disease problem. Owing to the fact that the administrative details and other considerations were so great, the suggestion was not adopted. And so I feel the problem has suffered during all these years through a failure of the states to provide adequately for the study of the subject, and because of the fact that the states, for the most part, see patients only in the terminal stages, when the pathology is a terminal one complicated by other diseases. Today there are very few states in the Union with an adequate state laboratory for the study of the pathologic anatomy, the biochemistry, or morbid physiology of the mental disease cases coming to them. I welcome with a great deal of pleasure the work that has been brought to our attention this morning by the preceding speaker in the anatomical study of one phase of mental disease, dementia precox, and I trust that this work will be extended all over the country until light comes from many sources.

The Doctor referred to the hospitalization of soldiers, saying the mental disease problem has been complicated by political changes and that these changes are beginning to take on more and more of a political aspect. One in three of the soldiers being hospitalized is a neuropsychiatric patient. A very large number of these cases do not need hospitalization at all, and if they were studied from the standpoint of science instead of that of political expediency, partisan advantage or votes, we should have a larger contribution to science. Many of these cases should be under medical care or in industrial and administrative fields rather than actually hospitalized.

Some of the medical colleges have fallen in line with the suggestions that have been made by the essayist this morning. Some colleges even in the sophomore year begin the study of normal psychology in lectures and demonstrations to students, and during the period of the junior and senior years these are extended into

more elaborate courses in abnormal psychology and finally into mental diseases. But few medical colleges have gone into medical instruction in psychiatry sufficiently to give its graduates a good foundation in a modern knowledge of these diseases.

The establishment of clinics, as the author suggests, in state institutions and outside clinics would meet a very small proportion of the problem because of the small number of institutions covering large territories.

Dr. Ralph N. Greene, Jacksonville, Fla.—In the beginning of my service at the Florida State Hospital, a number of years ago, we had 740 patients. The Hospital is located in a remote rural district far removed from the opportunity of consultations and conveniences enjoyed by hospitals in more populous centers. The Florida State Hospital operated from 1878 to 1909 without record of the performance of a single major surgical operation, during which time some patients must have suffered severely for want of it. In 1909 the institution had a medical staff of four physicians. The Hospital being remotely located, it has not been brought prominently into the public eye. Until very recently it operated with a patient population of two thousand and a medical staff of three physicians. A fourth has been recently added.

In Florida we have not a single general hospital provided with psychopathic wards, nor is there a general hospital in the State that routinely admits mental cases.

We have come to the realization that the insane asylum physician, in caring for mental diseases, becomes removed from other specialized branches of medicine, and we are beginning to believe that the mental case should be sent to the insane asylum only after a sojourn in a psychopathic ward of a general hospital. During his time in the general hospital he should be subjected to a critical medical, surgical and laboratory study and his correctable defects should be properly attended to. He should then be sent to the state hospital for the insane, if his mental symptoms continue, where he could reside in an atmosphere of rest and isolation and recover. Under these conditions, time and not the doctor is the principle determining factor.

I am of the opinion that eventually states will recognize the necessity for providing facilities whereby cases of acute mental disease may be first handled in a general hospital. They can, under these conditions, get more thorough and satisfactory care, and the early recoveries thus accomplished would not only save money but enable the patient to avoid the odium of having been sent to an insane asylum.

The care of the insane has been along lines entirely too stereotyped and there can be no harm in attempting a new plan of treatment which may produce satisfactory results.

Dr. M. A. Bliss, St. Louis, Mo.—The first of this year the National Committee, financed by the Commonwealth Fund of New York, proposed a plan for reducing juvenile delinquency in this country by sending out trained groups, a secretary, a psychiatrist, a psychologist and a social worker, to cities that would give them proper encouragement. St. Louis offered a good deal in the way of cooperation by probation officers of the Juvenile Court, and a group came to us in April. They examined all children that came to the Juvenile Court. They investigated the problem child from the public schools. They examined the problems from all social agencies. They went into a very thorough, well-rounded examination of all these children. It is essentially a child behavior clinic.

We are just now putting over an ordinance establishing this as a permanent part of our city plan, and we expect to correlate it. We should like to make it available for considering the problems of the public schools and of the big social agencies. I believe the idea will spread because a psychiatric clinic like this, amply financed, correlated with the social agencies as well as the public schools, cannot help following the suggestions given by the essayist this morning.

Dr. R. B. McBrayer, Sanatorium, N. C.—I would like to report some work the North Carolina State Sanatorium for Tuberculosis did a year ago which has not yet been reported. We moved the laboratory temporarily over to the state institution for wayward girls. The only reason I mention this is because these girls are believed to have an abnormal phychology. We have not studied them from a psychological standpoint or from a phychiatric point of view because we do not know how to do that as it should be done. We duplicated the basal metabolic rate determinations; we duplicated the blood sugar determinations and physical examinations. In about fifty of these girls, who showed the highest mentality, we found that nearly 50 per cent varied from the normal basal metabolic rate; that is, nearly 50 per cent of these girls had over plus 10 or under minus 10. In the same girls we found blood sugar abnormalities almost invariably. We found some definite signs of mild hyperthyroidism in many of them, and in others we found, along with the laboratory work, sufficient evidence to make a diagnosis of probable disturbed endocrine function. That was about as close as I could get.

This comes close to the work you men are dealing with, although we have not reported it, and have not followed it up.

Dr. Nolan D. C. Lewis, Washington, D. C.—It is very essential for us to counteract the prevalent feeling among the laity that it is a disgrace for anybody to become insane or to show abnormalities of behavior in conduct. We must educate the public, first, through school teachers; second, the clergy; and third, through the press. Every physician can likewise do an immense amount of work along this line. If we can impress upon the laity that cases of mental disorder with their peculiar behavior are no more of a disgrace than a case of typhoid fever or pneumonia, but must be gotten to a hospital immediately while the disease is still curable, we shall have made a great advance.

No surgeon wants a patient half dead with appendicitis and so we as psychiatrists desire our patients as early as possible in the disease in order to be able to prevent regression and to prevent a permanent psychosis.

Scientists have over-emphasized the factor of heredity in insanity, and have belittled the enormous environmental feature as a causative element in the development of mental disorder, and this over-emphasis has produced a self-protective attitude on the part of the relatives of psychotic individuals. All of us as physicians should keep this in mind and avail ourselves of every chance to consult the school teacher or newspaper man and impress upon them that it is not a family disgrace to have a disorder of the personality developing therein.

Dr. J. W. MacQuillan, Chattanooga, Tenn.—If I were called upon to make an investigation of the real condition of a country, I should always go first to the psychiatrists and the neurologists and visit the institutions and see what provision had been made for the care of patients and what advances had been made in the science. If I wanted to make a prognosis about the business affairs of the State of Georgia, I would not go to the politicians and business men in Atlanta and get that expansive idea of what was going on there, but I would go to Dr. Echols, of Milledgeville, and ask him for his statistics, and I would make a good prognosis of what was going to happen to the great State of Georgia.

The last speaker mentioned that as soon as we recognize a psychotic condition in people they should be committed to the hospital. Where is there a hospital to commit them that is appropriate? There are very few and these are altogether inadequate. The other day I looked at a beautiful edifice ready for worship which cost half a million dollars and said to one of the enthusiastic builders: "What a pity that it is not an asylum!" If we had that edifice in Chattanooga for the care of people afflicted with mental diseases, how much good we could do for the people of the Nation.

It requires a peculiar man to study neuropsychiatry. He must be divorced from commercialism and must be a living sacrifice to neuropsychology, with no desires outside of that, looking for no reward but the reward and the satisfaction that scientific achievement gives.

Dr. Echols (closing).—I wish to emphasize one point. The mental disease problem is a medical problem and must not be divorced from the medical profession. We must have the help of different organizations, the social service worker, the clergy, clubs, newspaper men, and so on. We need their influence. It is a medical problem and can be solved only in one way. Dr. Campbell, in a letter to me recently, summed up the situation when he said that there should be a general diffusion of psychiatric knowledge among the medical profession in general, so that patients may receive treatment months or years before they receive it at present.

FOOD AND LIFE*

By C. Hilton Rice, Jr., M.D.,
Montgomery, Ala.

During the past decade no set of workers in any department of dietetics has had anything like the opportunities of the pediatricians for observing the effect of food on life. For our experiments have been made not on laboratory animals or special nutritional cases, but directly and entirely on the human young. To hundreds of thousands of children we have fed an amazing variety of food formulae and have kept detailed records of results. In the name of science we have committed some ludicrous absurdities, but somehow we have muddled through to the rational basis of present day simplified infant feeding. We have learned that mathematical talent is not necessary to success in infant feeding; that precise caloric estimation is not fundamentally essential to child welfare; that the human infant is not a test tube, but a finely adjusted, protoplasmic organism capable of indicating in a number of ways his caloric requirements.

We have learned that a new special nomenclature solves no nutritional problems; that lactic acid milk and fat-free milk are still the plain old-fashioned buttermilk and skimmed milk. We have learned that the pediatrician and not Nature first advocated the split protein and the pediatrician failed. We have learned that babies weighed in grams gain no faster than those weighed in pounds and ounces. We are ready to admit, some of us reluctantly, that modified whole milk is better than modified top milk, that cooked milk gives better results than raw milk, and that plain old breast milk still heads the list of infant foods.

In short, we have come to see that the food and life problem cannot yet be reduced to a mathematical formula. With due regard for the chemists and the immense help they have given us, we know, from long observation, that he who thinks

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of food in terms of fats, proteins, carbohydrates, vitamins, calories, etc., gets a false perspective unless he also sees, beyond and behind, the great background of Nature against which he sets up his classification. For man is an integral part of the system of life about him. His flesh is of the very substance of his environment, air, water and soil. In him and through him play the forces of Nature. Directly and indirectly he is connected in a thousand subtle ways with his surroundings. In the soil beneath his feet bacteria and the roots of plants are laboring in symbiotic relationship in the first steps of his food preparation. The plant root feeds the bacteria and the bacteria in turn extract the nitrogen from the air and feed it to the plant. This nitrogen, along with water and other life elements in solution, passes into the plant to be utilized by the cells in their mysterious synthesis of food substances. In the green leaf of the plant another miracle of chemistry is wrought. Out of sunshine, water and carbon dioxid, and in a manner that defies laboratory imitation, the carbohydrates are compounded.

To insure the perpetuity of the plant in its life-giving function, countless species of beings lend their aid. Worms bore into the soil, opening up channels for the circulation of air and water, and myriad other creatures are eternally busy in reducing dead organic matter to its elemental state for re-utilization as plant food. Everywhere over the earth pollen-carrying insects are winging their busy ways from flower to flower that plants may reproduce their kind and guarantee to man and the animal world their varied and abundant diets.

Perhaps the outstanding concept of modern biology is the essential unity of life. More and more clearly the biologists and the physiological chemists are coming to see the bonds that link together all organic beings into a great cooperative system. More and more it becomes apparent that the protoplasmic machinery of this system is maintained in operation by the energy derived from the sun. There is yet a vast deal of mystery about the nature of life itself, but so far as our mortal activities go we literally are "children of the sun." It is the stored solar energy of the plant that keeps the animal world in motion, for all animals feed on plants or on other animals that feed on plants. The act of eating is merely our means of connecting our protoplasmic batteries to the solar charging station via the plant.

That is why it matters a vast deal what we eat and the form in which the various foodstuffs come to us. That is why the wild creature possesses a vigor and stamina and resistance to disease unknown to the domestic animal. All of his points of contact with Nature are established and he fairly glows and crackles with the energy of life. That also is why we see the blight of malnutrition on so many children. Too many points of contact with Nature are blocked. Shut in from the sun they become pale and rachitic; feeding on a deficient diet, solar energy reaches them in feeble and broken currents and they become listless, irritable and easily fatigued.

Since the chief purpose of nutrition is to supply solar energy to the organism, it would seem to follow that the fresher the food the heavier the charge of energy it carries. For example, there should be more of a vital kick in a fresh baked potato than in an equal quantity of a bleached, dessicated cereal that is kept for weeks or months in a container and then submitted to prolonged cooking. Certainly, as expressed, not in terms of caloric values, but in its effect on the child, the cereal appears to have lost something which the potato retains. Two years ago I began substituting potatoes for the cereals in my diet list for children from the twelfth to the fifteenth months, and the experiment has convinced me that a milk and potato diet will put more "pep" into a child than the milk and cereal diet.

In short, I have become an ardent advocate of the fresh food diet, of foods not only rich in vitamins and essential mineral content, but which carry their maximum charge of solar energy.

There is a philosophic saying that one cannot abstract the trout from the stream. This also is true of the human being. Strive as we will we cannot, by abstract thought, separate or isolate the individual

man from his environment. Evolution has done a vast deal for man, but she has not set him apart as an independent entity. He still is bound by indissoluble bonds to the organic kingdom within the womb of which he evolved into being. Figuratively speaking, urgent nutritive needs still turn his hungry, groping lips to the protoplasmic breasts of Nature, whose lacteal ducts originate in the roots and leaves of the plant and ramify through the ascending scale of organic beings to reach the nursling.

So it is that man receives his daily fill of synthetized terrestrial matter for body building; and so he receives his voltage of solar energy which he transforms and releases in his various activities.

To special research workers in the field of dietetics this point of view may seem more philosophical than scientific, more theoretical than practical, yet to us, whose daily work is the feeding of children, it is highly essential that we get the broadest possible vision of the food and life problem, a comprehension of the larger aspects of which is more important to us than the more technical knowledge of food analyses and syntheses. The very urgency of our task compels us to run far ahead of the food chemists. We have attained our present day success in infant feeding not by rational scientific methods, but by the age-old "trial and error" method. We use our various food formulae because they give results. We shift from combination to combination without a clear understanding of why a particular formula should succeed and others fail. We have a dozen feeding cases on as many different formulae. We encounter a difficult case that rejects what is indicated and thrives famously on some freak formula that violates all the rules of dietetics. In clinics and section meetings we preach scientific methods; in private practice we resort to empiricism, and it is in private practice that we get our best results.

That this is so does not lessen the value of the service we have rendered humanity. That we have learned to feed the infant deprived of breast milk is the chief triumph of pediatrics and the outstanding achievement in the history of dietetics.

We turn now to face the greater problem, the feeding of the child from his second year to adolescence. And the problem is not what a child should eat, but how to get him to eat it. To train children to eat properly so that they will maintain good habits of diet through life is the chief problem of preventive medicine and apparently the most hopeless.

In 1920 (*Journal A. M. A.*, July 10) I called attention to the probable relation of acquired food dislikes of childhood to the metabolic disorders of middle life. I pointed out that many children pass on into maturity with positive dislikes for certain essential foods, and that many "chronics" who haunt the office of the internist confess to food dislikes that date back to childhood. Further observation has convinced me that much of the ill health of later life is traceable to poor dietary habits formed in childhood.

We all know the difficulties encountered in holding an older child to his diet. Against the little influence that we wield a hundred stronger influences are opposed. Fresh roasted peanuts, bottle drinks, hot dogs and lollypops—that is the diet of young America. And when children pale and sicken and lag in the mad rush of life their parents bring them to us so that we may develop them back to the point where they can eat anything at any time "like other kids." From the viewpoint of nutrition the majority of the flappers and the jelly beans show all the signs of hectic weaklings sucking on the hind teats of Nature.

Visualized against the broad background of our complex, modern civilization, a solution of the food and life problem appears at once as the most vexing and discouraging and the most interesting undertaking of organized science. Already the great work is under way. Everywhere research workers, internists and pediatricians are making experiments and observations on human and animal nutrition.

However, the greater task is ours, for to us is left the feeding of children as they come to us one after one. By what means we shall exercise control over their diets from birth to adolescence is the topic open

for discussion. In my own limited sphere I have obtained gratifying results in certain instances by telling to intelligent mothers the story of food and life, somewhat as I have tried to tell it here. Of late, several mothers have informed me that their entire families were following my diet instructions and all were showing surprising improvement in physical appearances and dispositions.

DISCUSSION

Dr. L. T. Royster, Norfolk, Va.—Until we know the chemistry of the food that the child digests and at least the fundamentals of the principles of metabolism, we cannot adjust the food to the needs of the growing child. Now, this resolves itself into one very important thing, a balanced ration.

I want also to say that we must form an intimate partnership with the knowledge possessed by a first-class cook, and it is here we fail. What success I have attained in nutritional cases comes from my having taken a practical course in cooking. That brings up two points I want to stress. In the cooking of green vegetables upon whose importance such stress has been laid, boiling takes out about 80 per cent of the vitamins, leaving in only 20 per cent of them. Steaming reverses the percentage. There is no better way for the growing child to receive carbohydrate food than by the potato, but not boiled. That potato should be baked in a slow oven very thoroughly. We hear much about the deficiency diseases. Preceding the definite syndrome that we are pleased to call by this, that and the other name, there is a period of malnutrition with a picture and symptom-complex depending largely on which food factor has been most efficient.

Dr. W. L. Funkhouser, Atlanta, Ga.—Some four years ago Emerson, of Boston, came to Atlanta to study the nutrition of the school child and to teach nutrition. He found the greatest percentage of malnutrition in the school of the so-called better classes and in the negro schools; the lowest percentage was found in an orphan home where the children had a carefully balanced ration. In the schools which you might call just above middle class there was also a very small percentage of malnutrition due to the fact that the parents were intelligent, did their own work, the food was well cooked and the children had well-balanced food. The remedy is in properly cooked food and a properly selected variety of food. It is our duty to teach the mother how to prepare this food.

We cannot think of defective nutrition without considering the child who refuses to eat. This is quite a serious problem, one calling for careful physical examination, and often thorough psychological study. Also, we should study his daily regime to see he is not overworked and that he gets sufficient rest.

Dr. J. H. Graves, Houston, Tex.—Three-fourths of the world's children never see a physician. The average child who has malnutrition has it brought on by the modern complexities of life. The women will not devote the time that is necessary to preparing food, to cooking cabbage, beans and other foods that are necessary for the subsistence and strength of the growing child. The children get the outdoor exercise they need, the majority at least, except the very poor, who live in tenements and crowded insanitary places, but I believe it finally comes back to the housewife and her responsibilities. The people will have to be re-educated along the lines of nutrition just as the physician will have to be. It is the complexities of modern life that are producing so much maltnutrition.

Dr. Rice (closing).—I have learned as much from watching the so-called normal child as from feeding a case of malnutrition. The majority of children get along famously without the care of a pediatrist. The reason these children do well is that they eat everything and by eating everything they get all the food elements they need. Parents want their children to be like other children. In pediatrics, because it is a new specialty, we have overdone some things. Handing out diet lists does not solve the food and life problem. There are a thousand and one other factors that come in. In a family that knows how to live you may find two children that never have had trouble and a third child that suffers from malnutrition. They know what this child ought to eat, but they cannot train him to eat it. A mother came to me recently who had a well-trained children's nurse with her. She had taken her child to numerous pediatricians throughout the country and finally she came back to Montgomery, with the statement that she simply could not get the child to eat. I told her the child was suffering from too many pediatricians and diet lists. I advised her to get rid of the nurse and to let the child go out in the kitchen and eat with the cook. In a week's time the child was eating everything.

TRANSFUSION THROUGH THE UMBILICAL VEIN: CASE REPORT*

By J. Buren Sidbury, A.M., M.D.,
Wilmington, N. C.

History.—R. L. F., a male, was admitted to the hospital March 7, 1919, when two days old because of continuous bleeding from a dorsal slit incision of the penis made just after delivery. Labor was normal, birth weight 9 pounds, and he was the fourth pregnancy. There was no cyanosis, no jaundice, and no history of any hemorrhagic disease in the family. Three other

*Read in Section on Pediatrics, Southern Medical Association, Sixteenth Annual Meeting, Chattanooga, Tenn., Nov. 13-16, 1922.

children were living and well, and the father and mother were living and well.

Physical Examination.—He was a well-nourished infant, rather pale and with a somewhat wrinkled skin. He weighed 8¼ pounds, was rather listless and had a somewhat feeble cry for a baby as large as he was. Heart, lungs, abdomen and extremities were normal. The penis was surrounded by a rather thick dressing of gauze, which showed considerable bright red blood. The penis incision had been stitched over with the effect of having a new bleeding point from each needle puncture. A number of so-called local astringents had been applied, also calcium by mouth and one or two injections of "coagulins" had been given, but the bleeding continued. At this time the baby was given 15 c. c. of whole blood subcutaneously from the father, and this was repeated in eight hours. The nurse reported at the time of the second injection that the bleeding had been less since the first injection, but it had not ceased entirely. Eight hours later the third injection was given, and no bleeding had been noticed after the second injection, only a very slight oozing of serum.

At this time, the third day of life, the baby's blood showed the following: hgb., 25 per cent; red blood cells, 2,000,000; coagulation time, 15 m. The baby had taken no food except sugar solution 5 per cent, and was taking very little water, so naturally was very weak. It was decided to give the baby a transfusion and the mother was brought to the hospital from her home in the country, twelve miles away.

The following day, March 9, the baby was given 100 c. c. of blood through the umbilical vein by the Lindermann method. The baby had a slight chill and a rise of temperature to 103°, which came down to normal immediately and made an uneventful recovery. His hgb. was 80 per cent and red blood cells were 4,500,000 after the transfusion. At twelve months this baby weighed 25 pounds, at two years he weighed 30 pounds, and at three and a half years he weighed 38 pounds. He is normal in every way, as his photograph indicates.

This baby was transfused through his umbilical vein on his fourth day of life with the greatest ease. The fact that the majority of the hemorrhagic disease of the new born bleed in the first 48 hours of life should impress upon our minds the fact that if they have to be transfused they may be transfused through the umbilical vein with greater ease than any other way. The blood of these babies has a prolonged clotting time and bleeding time, and for that reason the probability of a clot's forming in the collapsed umbilical vein is very unlikely. I have performed necropsies in two cases of hemorrhagic disease of the new-born and the dissection of the umbilical vein to its entrance in the liver was smooth throughout and no signs of clots were seen. It has been found by Rodda and Warwick that blood in these babies has been found in the fluid state for hours after death.

To familiarize us with the anatomy of the fetal circulation, I am quoting from Gray's "Anatomy," which will emphasize its simplicity:

"The umbilical vein enters the abdomen at the umbilicus and passes upward along the free margin of the suspensory ligament of the liver to the under surface of that organ, where it gives off two or three branches to the left lobe, one of which is of large size, and others to the quadrate and Spigelian lobes. At the transverse fissure it divides into two; of these, the larger is joined by the portal vein and enters the right lobe; the smaller branch continues outward, under the name of the ductus venosus, and joins the left hepatic vein at the point of junction of that vessel with the inferior vena cava. The blood, therefore, which transverses the umbilical vein reaches the inferior vena cava in three different ways. The greater quantity circulates through

the liver with the portal venous blood before entering the inferior vena cava by the hepatic veins, some enters the liver directly and is also returned to the inferior vena cava by the hepatic veins; the smaller quantity passes directly into the inferior vena cava by the junction of the ductus venosus with the left hepatic vein."

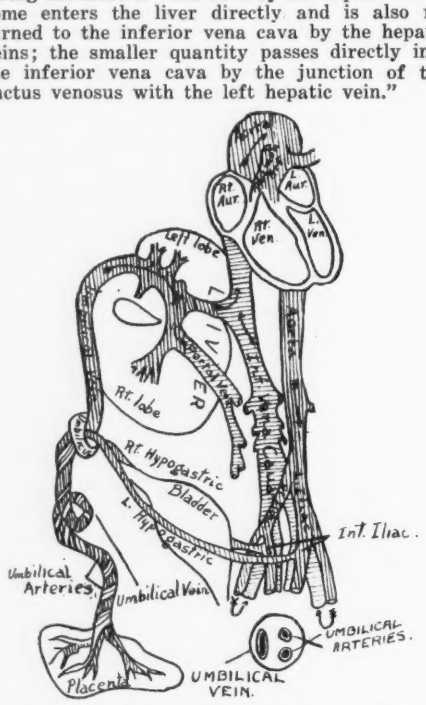

Diagram of Fetal Circulation, Gray's Anatomy.

CONCLUSIONS

(1) The umbilical vein may be patent and accessible for use for transfusion up to and including the fourth day.

(2) The superior longitudinal sinus is a comparatively easy route for one experienced in such methods, but not so to one not experienced, while the umbilical vein is simple for any one doing transfusion.

DISCUSSION

Dr. W. L. Funkhouser, Atlanta, Ga.—Cases of hemorrhage of the new born are very interesting because of the opportunity to get good results when treatment is not delayed. Not only in active hemorrhages but in cases of convulsions and high temperatures that come on immediately after delivery due to hemorrhage, early diagnosis and treatment is important. These cases should be tested out for the coagulation time and the bleeding time. If subcutaneous injection of blood does not give results, intravenous injection of blood will frequently result in prompt improvement. Dr. Sidbury's method is interesting, giving a new avenue for transfusion.

Dr. W. McKim Marriott, St. Louis, Mo.—Dr. Sidbury has given us a valuable method of treating hemorrhagic disease of the newly born. This condition is more frequent than has been generally recognized. Rodda, of Minneapolis, has been responsible for drawing attention to its frequency. These babies need blood transfusions, but it is often difficult to find an accessible vein. The superior longitudinal sinus is not a safe point for the injection when there is a tendency to hemorrhage. Dr. Sidbury's method is practical and will probably become the standard method of transfusing the newly born.

Dr. A. A. Walker, Birmingham, Ala.—When we realize that transfusion of whole blood acts as a specific in this disease 100 per cent of the cases ought to be saved. It acts almost like magic in stopping the hemorrhage and also furnishes blood to take the place of that lost. I had a very interesting case last year of this disease in which I did a transfusion of 50 c. c. of blood into the longitudinal sinus of a baby. Anyone who has had the experience of going into the longitudinal sinus knows that it is an operation with very few technical difficulties and with proper care it is easier than going into the veins of a fat adult. An analysis of 3000 autopsies on the new born made in New York showed that a large per cent of the deaths in children under one week was due to cerebral hemorrhage. Most of such cases, as Dr. Rodda reported, are true cases of hemorrhagic disease of the new born.

Dr. S. G. Glover, Greenville, S. C.—You see not occasionally but often in these young infants a type of convulsion and you wonder at the time what is its cause. One of the main causes is cerebral hemorrhage, and then again we have a condition known as infection through the cord. Not only that, but there are many infections through the cord or of the cord that are not recognized because the cord looks clean and you therefore are not suspicious of it. I was just wondering in this new method whether there might not be danger of infection through the cord regardless of how sterile you might be, as it is a common avenue of infection. At the same time would the possibility of transfusion through the jugular vein in preference to the umbilical vein be practical? I would like to have Dr. Sidbury express an opinion on that.

Dr. Oliver W. Hill, Knoxville, Tenn.—It is very difficult to get into the jugular vein of an infant, although it is perhaps the least difficult of the superficial veins.

Dr. Eugene Rosamond, Memphis, Tenn.—I would like to ask Dr. Sidbury if he typed this blood. I would like him to bring that out to complete his case report because it has recently been shown that the blood of the mother very frequently is coagulated by the serum of her infant. This method should not be used without typing the blood.

Dr. J. H. Mason Knox, Jr., Baltimore, Md.—The quantity of blood necessary in these cases is often over-estimated. Usually a very small quantity of blood, if given promptly, will stop

hemorrhage, which if allowed to go on a few days will require transfusion. As soon as the first symptom appears the diagnosis is possible, and some of the mother's blood can be given intramuscularly. A large group of these cases will need no further treatment.

Dr. Sidbury (closing).—Six or eight hours before transfusion was given, the cord was treated with sterile boric acid solution to keep it as soft as possible. It was then cut proximal to where it was tied and all septic precautions possible were taken. The blood was tested directly for agglutination and hemolysis, baby's blood against the mother's. We felt that this baby had lost three or four ounces of blood. It had been bleeding three days and was as white as a sheet. The hemoglobin was higher than I expected because I think it was concentrated blood. The baby lost a good deal of serum as well as fluid. My object was to replace the lost blood. The other method of giving the blood would be through the superior longitudinal sinus, or to have cut down on the jugular or median basilic vein. With the mother in the room I did not think this would have a good moral effect, so I gave the transfusion through the umbilical vein. I never heard of its being done before, but saw no reason why it could not be done.

EUROPEAN CHILD HEALTH PROGRAM AMERICAN RED CROSS 1921-22*

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The services of the American Red Cross in Europe during and subsequent to the Great War can be divided into several phases. Before America entered the war, a large amount of supplies were forwarded to nearly all the belligerent countries. Immediately upon the entrance of our Country actively into the war, the activities of the American Red Cross were increased many fold.

Primarily, of course, the duty of this organization was to care for the comfort of our own fighting forces and to supplement in every manner possible the medical and nursing services of the Army and Navy. At the same time, the American Red Cross took an active part, through its Department of Civil Affairs, in Europe in carrying on important work for the civilians of France and Belgium. The more important of these activities were concerned with giving assistance to the refugee populations driven out of northern France and Belgium and to the organization of various health activities for the children of these countries.

In this connection a number of important activities were started which have continued since and are proving real contributions to the child health program in France. Among these may be mentioned the School of Periculture in Paris and the demonstrative work for children in the Fourteenth and Nineteenth Arondissements in Paris.

Following the Armistice, the American Red Cross increased its activities to a general relief program, extending gradually to most of the countries of Central Europe. It cooperated actively in the plans of the American Relief Association, which conducted a remarkable system of feeding kitchens, particularly for the children of the devastated and impoverished European countries. The amount of material of all kinds distributed through the American Red Cross will always remain a monument to the generosity and good will of the American people. It is doubtful whether there are institutions for children in the whole stretch of country from the Gulf of Finland to the Adriatic which have not received supplies, particularly medical supplies and equipment from the American Red Cross.

In the Spring of 1921, the question of withdrawal from Europe was considered by the authorities in Washington. The acute suffering among the children of Central Europe was considerably relieved. There were practically no cases of real starvation, but there was widespread malnutrition and many conditions untoward to the development of normal child life. It was, therefore, determined to devote a final year in an attempt to assist these new-formed democracies of Central Europe to alleviate the condition of the children and to help the people of these

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countries in starting or continuing health activities for the children which would be permanent in character and carried on by the people themselves after the withdrawal of the American personnel.

This seemed to me to be an alluring opportunity. The future of these new-formed democracies, of course, depends upon the physical, mental and moral status of the children, their future citizens, and to have anything to do with a program intended to better permanently the health of these child populations was a great privilege.

My first trip as Field Medical Director was to the three Baltic states, now independent democracies, Esthonia, Latvia, and Lithuania. Our Commission there, under the direction of Colonel Edward W. Ryan, had already contributed greatly to improving health conditions of these countries. It had helped to stamp out a threatening typhus epidemic and had administered to the wounded of all belligerents in the recent local campaigns, for it must be remembered that the war did not cease in this territory after the Treaty of Versailles.

The services to the children of these countries naturally began in cooperation with the American Relief Association. A large group of small clinics under the direction of local doctors and nurses, and with the supervision of American personnel, was started in connection with the feeding kitchens. Usually a room in the same building or one near by was selected, and as the line of children formed to obtain their one standard meal in twenty-four hours, those that seemed sick or malnutritic were selected and given medical attention at the clinics.

One hundred and fifty of these ambulatoria were established. Most of them, of course, were temporary in character, and our endeavor later was to close those which were unnecessary and coordinate the activities of the remainder with the cooperation of the few existing hospitals and clinics in the three countries.

Perhaps the most important contribution to the child health program in these countries was the selection of a small number of strategic areas where, with the assistance of the local authorities, special places were selected wherein a fairly complete child health program, beginning with prenatal care, good obstetrical service, early postnatal care from the baby's birth and extending into and often through the school period, was undertaken.

We selected, where possible, university communities and worked with the active assistance of obstetrical and pediatric clinics. This business of trying to keep well children well through home visits and instruction to mothers was somewhat new, but the physicians and public officials became enthusiastic in their interest.

These centers were started at Narva, Reval and the wonderful university town of Dorpot in Esthonia; in Libau and Riga in Latvia, and in Korno in Lithuania. Recent reports received from these countries indicate that the work for children thus started has been continued and increased considerably since our withdrawal last July, and we have every assurance that it has become a permanent asset to the children in these countries.

We believe that when medical students by personal experience learn how much easier it is to keep well children well than to cure sick children, when they begin their medical practice in the rural districts of the Baltic states they will be interested in starting similar activities in their own communities.

In Poland work of a similar character was undertaken. The program of the American Relief Association in Poland was organized with particular efficiency by the Poles themselves through the so-called P.A.K.P.D., the Polish-American Committee for relief of children. This organization had established feeding centers in all sections of the country, in the cities and larger towns. To further the work of the American Red Cross, a subcommittee on health was organized in connection with each of the local P.A.K.P.D. committees. These health committees were composed of the health officers and physicians in the district, and were instrumental in establishing clinics for the care of mothers and children.

In addition, in Poland, demonstration areas were selected also in Wilno, Warsaw, Krakow and Lwon (Lemberg), all in connection with pediatric clinics, where an effort was made to reach all mothers and young children. In each of these centers classes were organized. In some of them milk, a scarce article of diet in Poland at this time, was distributed under the doctor's orders.

With the assistance of the League of Red Cross Societies, an interesting campaign of propaganda was carried on in Poland. A corps of lecturers was secured to deliver carefully prepared discourses on maternity and child health work, suitable not only to adults but to children. A number of moving picture films on various phases of child health activity were shown. The Polish Government placed a railroad car at our disposal. An advance agent went ahead engaging halls, visiting the officials and prominent citizens, distributing posters, etc., and then the car would arrive and a stay of from two to three days or perhaps a week, depending upon the size of the town, was made in most of the large cities of the country. The greatest interest was elicited, and practically every hall engaged was crowded for each of the lectures.

Follow-up work for children was organized by nurses and doctors after the lecturers had left. It is estimated that more than four hundred thousand children were reached through the clinics started in Poland.

One of the great difficulties encountered in Poland was to secure the right kind of physicians for our stations. In all of the country there is only one physician to about every ten thousand inhabitants, and many of these doctors are still required for military service. There was also a shortage of nurses, and indeed the trained nurse, as we know her in America, is almost unknown in Poland. This profession has not attracted as yet young women of education and culture.

To make good this deficiency, a short course for nurses' aids was organized in Krakow under American nurses, and through it approximately one hundred young women were prepared for service in the various clinics. Under supervision, they have done remarkably well.

A project of even more importance for the public health of Poland in the future has been the establishment of two training centers of high standard for nurses, one in Posen and one in Warsaw. To these schools Polish girls of education and refinement have been attracted and are now going through a course that is quite equal to those in our best schools in America. Both of these schools are under the supervision of splendid American nurses, associated on their faculties with Polish nurses trained in America. The graduates of these schools unquestionably in due course will greatly promote the profession of nursing in Poland.

Czecho-Slovakia has been described as a war baby born after a long period of waiting through the instrumentality of Dr. Masaryk and President Wilson. The program in Czecho-Slovakia was carefully considered before the American Red Cross began operations. It was finally agreed to establish twenty-one completely equipped health centers in that country. The installation of these centers progressed slowly, and the last one was opened in November, 1921.

A careful survey of each community in which the centers were established was made, and the Government, through its Ministries of Health and Social Welfare, rendered valuable assistance. A central advisory board was established upon which Government ministers, university professors, both Czech and German, medical societies, child health organizations, and the Czecho-Slovak Red Cross were represented.

The first contact through these centers was made with school children. It was found that a large proportion of them were remarkably malnutritic. Through the help of these health centers, thousands of school children for the first time were brought under medical supervision.

One of the great difficulties in Czecho-Slovakia was the widespread racial antagonism. In many instances this was overcome, and all the elements in each community were persuaded to work together for the general good.

There was also in Czecho-Slovakia a dearth of diplomatized nurses. To meet this need, a school of nursing was opened in Prague in connection with the City Hospital. Two wards of the Hospital were taken over by the American Red Cross, and the thoroughness of the work done there and the skill with which the patients were cared for in these wards has made a profound impression upon the attending physicians. It is interesting to relate that during a serious illness President Masaryk asked for and was nursed by American nurses.

One of the important developments of the work, particularly in Czecho-Slovakia, was the training of health visitors for work in the clinics. Women of considerable education were selected and given practical training at the centers and a didactic course in both languages at Prague. The work is now being efficiently carried on by native doctors and nurses under a young Czech physician who spent a year studying child health activities in America.

Austria, perhaps more than any other country, has suffered in its resources from the World War. Although there were many physicians and others familiar with child health work, the lack of resources prevented much that they would like to do. The problem of the American Red Cross was primarily that of assisting existing organizations and of securing cooperation in a general program for mothers and children.

The lack of sufficient public health nurses was also felt in Austria. Indeed, the salaries at the present rate of exchange are so small that nurses can only live when they do institutional work. However, a number of short courses for health visitors have been started and the nursing superintendents of child health organizations were induced to cooperate actively in our program and supervise the work in the stations.

An interesting experiment in modern alchemy furthered our work. We were able to change a large amount of tobacco in the possession of the American Red Cross after the war, with the approval of the Austrian Government, into milk; that is, into the purchase of dairy cows, which contributed materially to the services of the various stations.

In each of the provinces of Austria committees were formed for the carrying on of the children's work and a strong central committee had been set up in Vienna, which will have general direction of these activities in the whole country.

Hungary was the last country entered last year by the American Red Cross, and because of the cordial cooperation of the St. Stephena Society, which had been doing excellent work for children throughout Hungary for several years, a really remarkably satisfactory program was made possible.

With the assistance of local committees, more than sixty stations for mothers and children were started in the various larger towns in Hungary. Some twenty-five of these were in Budapest. In fact, the whole city of Budapest is covered by a series of areas in which there is a well-equipped health center presided over by an obstetrician and pediatrician with the assistance of several nurses. In each of these centers there are prenatal clinics, clinics for mothers and young children and clinics for the preschool child.

Practically every new-born child is promptly visited, and in some of the stations 75 per cent of the pregnancies are registered some months in advance of the confinement. So-called wander boxes, containing the necessary supplies for maternity work and baby care, have been prepared in large numbers and distributed throughout the country to be loaned to indigent families.

It is interesting to know that by Government regulation every cinema performance in the country must include several minutes of films depicting some phase of child health work.

It is to be greatly hoped that for the furtherance of child health work in general throughout the world, the program now carried on in Hungary may suffer no interruption.

It is only fair to state that much of the efficiency of this exceedingly interesting program was due to a young Hungarian physician, Dr. Paul Zentai, and that he received much advice and assistance from

Dr. Philip C. Jeans, of Washington University, St. Louis, Mo., Associate Field Medical Director, and had the cordial support of our Red Cross Commissioner to Hungary, Captain Pedlow, who endeared himself in a unique manner to all classes of the country.

The child health work in Jugo-Slavia was directed primarily by the Serbian Child Welfare Association of America, which received a liberal subsidy from the American Red Cross. The American Red Cross also furnished some personnel and was called upon frequently for advice. The Director of this Commission was Dr. R. R. Reeder, well known in this country and a veteran in American Red Cross service.

The outstanding feature of the work in Jugo-Slavia was the very successful educational propaganda in the schools and the preparation of text books on health. The carrying organization in this country was the so-called Health Cooperative, an organization which has been very helpful in promoting farming in all parts of the country.

Through this organization ten health centers were set up, which covered ten different areas. In Belgrade, under the supervision of an English nurse, with the assistance of the American Red Cross, a training school of high standard for nurses has been started.

Time will not permit me even to outline the American Red Cross service to other countries of Central Europe. Important relief programs, having also some constructive and permanent features, were started in Albania and Montenegro. An exceedingly interesting health center was opened in Athens through the enthusiasm and influence of Mrs. Charles M. Heilman, an American nurse. This clinic has survived several changes in government, and has the support of both the Government and leading citizens of the State. Similar work and courses for nurses was also started in Constantinople.

As one looks back upon a year's experience in Central Europe, several outstanding facts loom in the horizon: first, the general feeling of patriotism in these newformed countries, native races indigenous to the soil are coming into their own now for the first time in several countries after years of oppression.

Secondly, there is the great desire for education. Students, men and women, are crowding into universities in these countries in larger numbers than ever, all anxious to equip themselves for life and service. Certainly it is not to be that this energy and devotion will come to naught. The strong countries of the world must see to it that the latent energies springing up in the newly-formed democracies are not thwarted, but are protected and given the opportunity under favorable conditions for self-expression.

Sir Arthur Newsholme, who attended by invitation the Medical Conference of the Red Cross Commissioners in Paris, spoke enthusiastically about the results of the child health program. He said that new ideals had been given to hundreds of physicians in various fields, and that even if a single child's life had not been saved through American endeavor, great good had been achieved in these demonstrations. They had shown that the boundaries of nationalism can be broken down, and that men and women of one country can sympathize and help men, women and children of another.

DISCUSSION

Dr. W. A. Mulherin, Augusta, Ga.—We ought to be proud of Dr. Knox's activities in Europe, and likewise proud that he is a member of this Section. It is very pleasing and gratifying to have Dr. Knox give us first-hand information, since his return from Europe, about his activities with the American Relief Association. Likewise it is very instructive to learn of the excellent organizations which were perfected under Dr. Knox's command. Such organization appears to me to be ideal, and it is not difficult to understand why such good results were secured.

Dr. W. L. Mitchell, St. Louis, Mo.—Dr. Knox has just told you that the work in Poland was combined with the work of the American League Administration, or the Hoover people. This combination took place in the winter of 1920-21 and the work began in the spring of 1921. The Hoover people were doing entirely feeding, while the Red Cross people were doing entirely relief work, except for the medical work that was being done in these little places. The combining of these two organizations grafted onto the work of the child health program that was in its infancy led to some very good results. At the

time of combining the two organizations the American Red Cross was feeding 1,200,000 people daily in Poland. Of this number those between three and sixteen years were receiving 3 grams of various kinds of food, all cooked. The children between 0 and 36 months received 120 grams consisting of a milk preparation. When the American Relief Administration began its work in Austria in 1918-19, the influence of Pirquet was brought to bear on the American Administration to such a great extent that they had to permit Pirquet and his followers to examine all children before one ounce of food was given. The result was that each child received the proper kind of food and the proper amount. Pirquet developed his system of measuring food. In Poland that was not possible because of the economic and militaristic conditions in the latter part of 1918 and early part of 1919. Then, too, there was no von Pirquet in Poland.

At the time we began our child health program the children had been fed for two and one-half years without a medical examination. The second year I made an examination of 2500 children between the ages of 0 and 36 months, averaging 13 months. Sixty-five per cent were diseased; 10 per cent of all examined had rickets; and 25 per cent of all examined had malnutrition. The high incidence of rickets and malnutrition was entirely due to faulty feeding. The high incidence of disease is due to the fact that medical examinations were not made. When the American Red Cross joined hands with the American League Administration they established infant health stations, 68 of them, throughout Poland, where the children who were being fed by the American Relief Administration were examined by competent physicians and given medical advice. Public health workers were brought into the game and home visiting was established. Mothers were advised as to clothing for the children. Besides that food was given to them. Unfortunately there was not sufficient fresh milk in Poland to supply children up to even 2 years of age, so we had to make use of phosphated milk. We got plenty from America. From this we made up food and gave it out in bottles. Then, too, the mothers were advised to add fruit and vegetable juices to the child's diet until the winter of 1921-22, when oranges were forbidden in Poland because they were considered a luxury. That was due to the economic standpoint. Last year they were permitted to come in from Italy, but they were too expensive for those who demanded this sort of feeding to purchase. Enormous quantities of cod liver oil were given out. This was given to every case of rickets and malnutrition and was possible because the American people sent it over through the American Red Cross.

Dr. R. R. McHenry, Seligman, Mo.—I served two years over there in the Russian Commission under Col. Ryan. Our work was relief work until Dr. Knox came and the child health program was established. Almost all my work was done in Serbia with the formation of a child health program. We went to Serbia and tried to help them help themselves. You may not know that while Serbia has the highest birth rate it also has the highest death rate. We were out in the country and were up against the real thing in trying to feed these children and to give prenatal and postnatal instruction to the mothers. I went there and devoted three months to the work of eliminating intestinal worms, a complaint with which every one suffered. Some of these people passed from 4 to 200 worms, many of them a foot long. You cannot conceive of the seriousness of the affair. I tried to teach the mothers that these intestinal worms were not something necessary to the growth of the child, but a disease that should be treated. I believe we accomplished much with our work.

Dr. Frank Howard Richardson, Black Mountain, N. C.—It is quite a new thing to think we have been teaching Europe after learning from them for all these years. I hope Dr. Knox will put his experiences in his State on paper, so that some of us can make use of them in our own states.

Dr. Philip F. Barbour, Louisville, Ky.—There are many states in our own beautiful country that need health campaigns as much as Europe. Our Southern pediatricians will have to do health work to develop among the people an idea of the necessity of doing intensive work among children. Some of our states are doing splendidly, but they are not reaching everybody they ought to reach. The smaller districts away from the railroad are not getting much benefit, and we should ourselves try to bring home to those in the smaller communities the necessity and the value of health campaigns for children.

Dr. John Barbee, Knoxville, Tenn.—Already in my community we have put on two full-time nurses for community work. I think we are handicapped in not knowing how to approach the doctors in the State. In our communities when a problem comes to us we put on our work to the extent of pauperizing our community. We have been taking away from the profession in general because no few men can do what a great profession can do. If the profession can educate along the lines Dr. Knox educated the people in Europe we could do more for the community than if a few individuals were doing the work.

I am interested in the question of whether the work should be continued in foreign fields when there is so much to do at home. This is a question that is being raised in the medical mind as well as in that of the laity. My wife is a director in the local Red Cross Association and just a few days ago she showed me a letter from Germany pleading for some American help to continue the day nursery, that in the local community they were having to abandon it because of the great financial strain and by the first of January it would be closed up. In this day nursery they were caring for the babies so the mothers could go out and help make a living. Should we feel like withdrawing from foreign fields and giving to our own communities? We must consider that, after all, we are all brothers.

Dr. Knox (closing).—It is understood, of course, that the emergency program of general relief and medical assistance had been carried on before we arrived. There was a Red Cross commission in each of these countries doing relief work. Dr. Jeans, Dr. Manning and I as Field Directors were to give advice about the withdrawal of certain small clinics and the curtailing of the relief program as we were concerned with what was called a constructive health program in these areas.

I am glad that Dr. McHenry spoke of Serbia. I think the best school propaganda work was done there. It would be very interesting to see the three or four different groups of school booklets that were published by competitive examination for teaching child health.

Our experience in Europe taught us that the need of better health is universal and that perhaps the helpless infant is the most potent factor in leading the various races of the world to drop their past differences and to cooperate in a common effort to eliminate unnecessary sickness and death.

OBSTRUCTION OF THE BRONCHI BY NON-OPAQUE FOREIGN BODIES: CASE REPORT*

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and
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Our reasons for presenting this paper are: first, to present an unusual case; and, second, to call the attention of clinicians to the x-ray as a valuable adjunct in diagnosing this condition.

Until Manges[1] and his colleagues published their epoch-making work, there was little known about the x-ray diagnosis of this condition. We had all seen the abnormal condition on screen and plate, but it was they who interpreted the signs so intelligently that the diagnosis in most cases is made easy.

The most frequent of the non-opaque foreign bodies is the peanut. The next most frequent, in our experience, is the watermelon seed, and we find that this does not cause obstructive signs in all cases, or at least there is not always evidence of obstruction at the time of examination. In others we have found obstruction on one side and in a very short time have found it on the opposite side, and even a third examination made within a few minutes will in some cases reveal no sign of obstruction, this being due to the ease with which the seed, with a hard, slick covering, moves from one part of the air passages to another. In none of the cases obstructed by watermelon seed have the signs been as definite as in those of some other objects, as the peanut, raisin, etc.

We are unable to add anything new that is of value to the signs from which a diagnosis is made, such as emphysema of the obstructed lung with consequent widening of the interspaces, depression of the diaphragm with limited excursions varying from a mild to a marked degree, in some cases even to a complete loss of movement and displacement of the mediastinal structures to the opposite side. The degree of these signs depends on the degree of distention of the lung. Almost always there is found some increase in density of the lung below the obstruction and sometimes abscess in this area. If the obstruction has persisted for a very great length of time, there is what is apparently congestion of the unobstructed lung. It seems logical that this may be due to overwork of the lung, or possibly to pressure of the mediastinal structures against it. If these signs are present we are sure there is obstruction of the bronchus. Manges[2] calls attention to extrinsic pressure as a cause of obstruction, this being caused in most instances by an hypertrophied lymph node, which casts a shadow on the plate. We would like to call attention to congenital atresia of the bronchus as a possible cause of obstruction.

The following case was mentioned by Peeler[3] from the standpoint of bronchoscopy:

Baby H., a girl, was referred by Dr. Y. W. Faison.

Weight at birth was 7½ pounds. It required forty minutes to resuscitate her. Otherwise she was normal. When two weeks of age her mother noticed dyspnea and cyanosis after crying. At the age of four weeks an x-ray examination was made and typical signs of obstruction of the left bronchus were noted (See Fig. 1). Despite the

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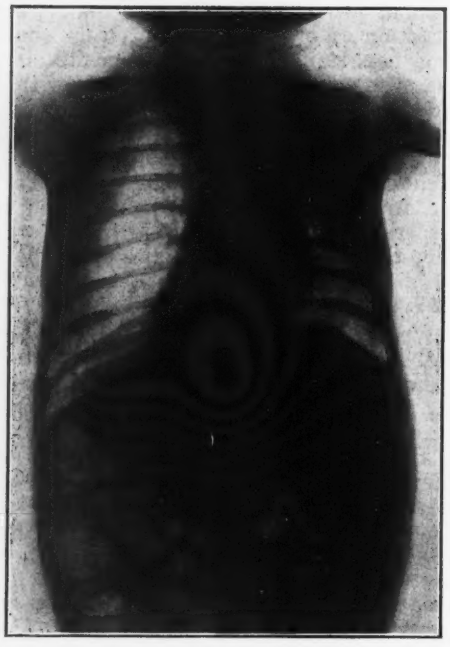

Fig. 1.

age of the child and lack of history of sudden choking, we assumed a diagnosis of foreign body. Bronchoscopy was attempted, but on account of the small size of the larynx, this was unsuccessful. The patient was examined at frequent intervals during the next four weeks of her life, and there was no appreciable change in the condition of the lung other than gradual increase in distention. Autopsy revealed that the left main bronchus was more than twice the size of the right with normal secondary bronchus to lower lobe, while those to the upper lobe showed atresia (See Fig. 2). The upper lobe was greatly distended, filling almost the entire chest cavity, and by firm pressure on this a small amount of air could be forced through the constricted bronchi, this leading to the conclusion that on inspiration a small amount of air entered the lung and the force of expiration was not sufficient to expel it. The lower lobe was found collapsed. Microscopic study revealed no pathology which could be attributed as a cause of the condition and led us to believe it was congenital.

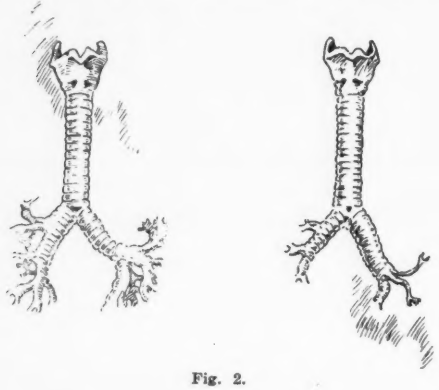

Fig. 2.

CONCLUSIONS

We feel that in the past many of these cases obstructed by foreign body have passed with the diagnosis of pneumonia and lung abscess and have gone to death or permanent invalidism before the cause was found. We would like to aid in a wider dissemination of knowledge among medical men that the condition is not a rare one, and that accurate diagnosis can be made and if recognized early a large per cent of them can be cured.

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DISCUSSION

Dr. A. L. Gray, Richmond, Va.—It takes more than ordinary diligence to determine definitely the presence of a non-opaque foreign body. I have missed them and have not discovered them until the lung or the lobe of the lung was beginning to show a water-logged condition. All of the difficulties that one meets with usually occur in very small children who always begin to squall when you attempt to make an examination. Dr. Manges does not think that is a very great hindrance, but with my limited experience and my rather tender heart I find that it bothers me considerably.

I may emphasize some of the points that have been brought out primarily by Dr. Iglauer, of Cincinnati, who was the first one to diagnose these conditions. Dr. Manges also has written a most complete dissertation on the subject. One will observe an emphysema which may not be plainly visible at all times, but which may be visible only at the end of expiration and of course can be determined only by comparison. A lag in the diaphragm on the affected side is considered of the greatest diagnostic aid. Now I want to emphasize a point. If you fail to find evidence of a foreign body at the first examination do not say there is no foreign body there, but try again. Perhaps you will find it the second time. The condition which appears to have been present in Dr. Phillips' case, namely, atelectasis, is indeed confusing. I recently had a case that seemed to be a congenital atelectasis from some cause in which both lungs were involved. This child was examined for the presence of a foreign

body. I did not find one. I made a diagnosis of delayed lung expansion. The child was three months old.

Dr. M. F. Arbuckle, St. Louis, Mo.—We cannot emphasize too much the importance of an x-ray study of these cases. As an adjunct to the diagnosis and to making out the location of these foreign bodies, it is most important.

The Doctor spoke of a child four weeks old in which the introduction of a bronchoscope was not successful. I wish to ask him if the 4 mm. tube was used. He also spoke of the many cases which go undiagnosed. That is very important. It is more important for the man in general practice or for the pediatrist to realize that fact than it is for the x-ray man, because once the x-ray man gets the case he will probably find the foreign body.

I have had a good many experiences in patients who had pneumonia from which they did not recover or pneumonia with recurrence, or some chest condition which had been diagnosed as pneumonia or tuberculosis or empyema which lasted for months. These patients wander from one doctor to another until finally they get into the hands of some one who has an x-ray examination made. In one case that I remember particularly well, a child who had had just such a course, the x-ray disclosed a six-penny nail in the bronchus which had been there for eight months. Bronchoscopy was advised. The child was at that time moribund. It was nearly pulseless and the parents were warned that there possibly would be a fatal ending. The trachea was filled with pus and when the bronchoscope was introduced the tube immediately filled with pus. The suction apparatus in the Jackson tube was put into use and we were succeeding fairly well in removing this pus from the trachea when the child suddenly stopped breathing. There was no other instrumentation whatever. I got a post mortem examination and found that the nail had come out of a nest of granulations in the bronchus and had then become impacted in the bronchus of the other lung, thus shutting off the remaining air supply. If that condition had been properly diagnosed when it was first present, or if an x-ray examination had been made, there is no question that the nail could have been removed at once and the child's life saved.

Dr. E. C. Samuel, New Orleans, La.—We have charge of the roentgen ray department of the Eye, Ear, Nose and Throat Hospital in New Orleans over which Dr. Lynch presides. I am sure that most of you know of his suspension work. There is hardly a week that we do not get a case or two of these foreign bodies. We have made it a practice in the last year or so in all instances possible to make a stereoscopic study of these chests and there has been considerable help derived from a study of the plates. It is not always possible, especially in children, to obtain both plates for stereoscopic study. I am sure that those of you who try it will find that it gives additional information which the single plate does not give.

Dr. N. C. Womack, Jackson, Miss.—I would like to say a word relative to the obstruction of bronchi by non-opaque bodies. In the diagnosis, the history is the most important aid; however, with the history an x-ray should always be made. We have these cases frequently and the x-ray helps at times, especially if it is a case of long standing. We recently made a diagnosis of a foreign body from the history and made a picture, which indicated that it might be in the upper right bronchus. It was removed from the left bronchus.

From the pediatrician's viewpoint we should be on the alert for foreign bodies, whenever we find a case with recurring periods of difficult breathing or violent coughing, with intervals of apparent comfort between attacks, and the absence of symptoms of an acute febrile condition. On account of the seriousness of the condition the x-ray as well as every other means of diagnosis should be used.

Dr. W. S. Lawrence, Memphis, Tenn.—Regarding the question raised by Dr. Gray about the difficulty of making examinations in children, I have tried this scheme: the trouble begins with these little fellows when you begin to put them on the table. They are all right when they come into the office, but when you begin to do something, they start to cry. They are generally brought by their mother or nurse or somebody they like. Let the mother or nurse hold the child and he is well contented. I arrange the apparatus beforehand. Then I let the mother stand at the foot of the table and put the screen across her chest; then tell the little fellow to hug mother around the neck. Watch the respiration and snap on full inspiration and you have the picture. You can make two or three plates and you are apt to get good ones instead of two or three poor ones.

Dr. A. L. Gray, Richmond, Va.—It is very hard to diagnose the presence of a non-opaque foreign body by x-ray plates alone. I have resorted to Dr. Lawrence's expedient many times. You have to observe the movements of the diaphragm. You can see a constant or a disappearing emphysema in the lung with the fluoroscope, but you may not see it in plates.

Dr. Phillips (closing).—If you do not find signs of obstruction on the first examination, do not say a foreign body is not present if you have a history indicating that it might possibly be there. Keep on making examinations until you are sure.

In answer to Dr. Arbuckle's question, I wish to say that bronchoscopy was attempted with a 4 mm. bronchoscope, but the bronchoscopist was unable to pass it through the larynx without doing damage.

We cannot emphasize early diagnosis enough, especially to the men who are seeing these cases first, the clinician and the general practitioner. The reason they do not suspect the possibility of this condition in some cases earlier than they do and do not know of the method of diagnosis, is that it was worked out by the x-ray men and published in the x-ray journals, and it has not been published extensively enough for the

knowledge to come into the hands of the profession generally, that it is not a rare condition and that it can be positively diagnosed.

In regard to Dr. Lawrence's discussion on getting the plates before the babies cry, ordinarily I do not like to hear a baby cry, but in these cases I prefer that the baby should cry in order to get the plate on a full inspiration. If the baby does not cry, it is well to make it cry.

I am glad Dr. Gray emphasized the point that we should use the screen with the plate examination.

MODIFICATION OF VAN SLYKE AND CULLEN AERATION BLOCK IN DETERMINATIONS OF AMMONIA AND UREA IN BLOOD AND URINE

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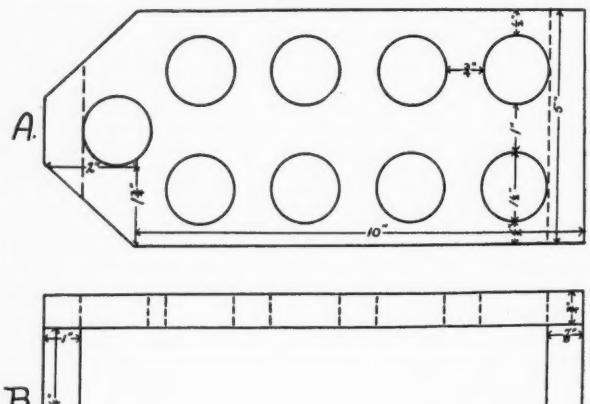
While conducting a series of research experiments involving the use of the Van Slyke and Cullen apparatus for the determination of ammonia or urea in blood or urine, it was found that the original aeration block possessed certain disadvantages. Among these are the following: (1) the impossibility of gaining any idea of the rapidity of aeration without withdrawing each tube separately and not using a manometer; (2) the degree of frothing cannot be readily observed; and (3) that the change of color of the indicator in the acid tube cannot readily be observed should an excess of ammonia be present. In consequence of remedying these deficiencies, the following open aeration "block" was devised.

According to the accompanying cut it will be seen that the open "block" consists of a top and bottom board containing a series of holes for supporting the tubes in proper place, each board being supported on end to give proper height to the block. Both top (A) and side (B) views are presented as well as general dimensions for their construction. The holes were made to fit loosely aeration tubes as purchased in the original outfit. As designed, the block is arranged to be able to run two sets of duplicate determinations.

With the substitution of this open "block" for the usual block as used in the Van Slyke and Cullen aeration apparatus, a more careful manipulation of the apparatus was accomplished without the customary raising of tubes for each observation. Where a greater number of determinations are to be run, a larger open block can be made by merely extending the design. With the full running of the apparatus a glance need only be made at it instead of the burdensome lifting of each tube to see how each one is conducting itself.



TROPICAL DISEASES AND PUBLIC HEALTH

SOME NOTES ON RECENT ADVANCES IN THE TREATMENT OF HOOKWORM DISEASE*

By A. T. Cooper, M.D.,
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The study of anything pertaining to hookworm disease is of direct bearing on the health of communities in the Southern states, where this disease is epidemic. This disease is now so more or less widespread that it has not the tendency to be limited to a particular class of workers.

Hookworm disease primarily is a disease of the tropics and semi-tropical regions. The method of spread and infection is well known and in farm districts of the Southern states the more or less primitive sanitary arrangements favor not only infection of the soil, but the preservation of the parasite. As a matter of interest it would be well to remember that out of a total of more than 500,000 men examined for hookworm in the United States Army, 11.3 per cent were found to be infected. In hookworm areas, the incidence averaged 17 per cent, rising as high as 32 per cent for certain Southern states. The *Journal of the American Medical Association*, in an editorial,[1] states:

"If one bears in mind the acknowledged deteriorating influence of hookworm infection on the health, education, industrial progress and efficiency of those who are involved, the national import of the situation becomes impressive."

The *Journal of the American Medical Association*,[2] commenting on the expedition sent to Trinidad recently to study the life of hookworm eggs and larvae in the soil, states that

"This expedition incriminates the pig as a carrier of this disease. Achert showed that eggs of the human hookworm developed as readily in pigs as man, thus making pigs a factor in the dissemination of hookworm. This expedition also found that there was in Trinidad a reduction of more than 90 per cent in the number of larvae in about three weeks after the elimination of soil pollution. Incidentally it is well to remember that the dog is also subject to hookworm disease and may act as a carrier."

*From the Medical Service, Station Hospital.

Sisco,[3] whose observations in Antigua, one of the leeward islands of the British West Indies, were conducted with the support and under the auspices of the International Health Board of the Rockefeller Foundation, in reporting a sanitary study of an area in which intensive anti-hookworm treatment had been carried on in 1915-1917, found on re-examining in April, 1922, that of 62.6 per cent of the persons cured in 1915-1917, the rate of reinfection in 1922 was 21.2 per cent. The primary rate of infection before treatment in 1915-1917 was 29.8 per cent. He also found that apparently 4.9 per cent were probably continued infections rather than reinfections. The only drug used in treatment was thymol. The number of treatments necessary before cure was effected varied from one to seventeen. It is interesting to note that in the case of only three of the number treated in 1915-1917 has hookworm been eradicated by one treatment of thymol. The experience at Fort Benning has been that it took, in the majority of cases, two or more courses of thymol or oil of chenopodium treatment to render a stool free of hookworm ova. The patient had to be hospitalized from three to four days or up to several weeks, with restriction of diet during treatment. Treatments were not repeated within one week's time for fear of causing toxic symptoms.

In the treatment of individuals infected with this disease, any drug which is more effective in its action than the drugs previously used, naturally is of benefit to the community. The reports on carbon tetrechlorid appearing the past year in the literature seemed to point to this drug as superior to those previously used. The first appearance in literature is a report of Nichols and Hampton in the *British Medical Journal*.[4] They relate the case of a murderer under sentence of death who volunteered to take 6 c. c. of carbon tetrachlorid, which was repeated thirteen days later. The execution took place one week after the second dose. Autopsy showed no hookworms or ascarids in the intestinal

tract. Sections of the organs were examined and showed no signs of degeneration. The students of an agricultural college were then each given a dose of 3 c. c. Not one of them was inconvenienced and all continued their usual work. Stool examination showed 90 per cent cured. Hall published the results of his experience with carbon tetrachlorid on thirty dogs.[5] He stated that in the case of animals given 3 c. c. of this drug for every kilogram of live weight a dose of 3 c. c. for an average size dog, all the hookworms originally present were expelled, a result he had never been able to obtain in any series of tests of anthelmintics on hundreds of dogs during the preceding six years. This author also tested thymol, chenopodium, chloroform and different combinations of these drugs. He found that a mixture of thymol and carbon tetrachlorid in the proportion of 1 c. c. of carbon tetrachlorid to 10 grains (0.648 grams) of thymol or carbon tetrachlorid, 3 c. c. to oil of chenopodium 1 c. c., were effective in removing all hookworms. He also found that carbon tetrachlorid was effective in removing ascarids.

Leach[6] reported in detail practically a year ago his experience in fourteen cases of hookworm, using carbon tetrachlorid as a vermifuge. He gave doses in size from 1.5 c. c. up to 10 c. c. at a single dose. One patient, a condemned criminal, received 10 c. c. of carbon tetrachlorid, followed one week later by 2 c. c. After execution a post mortem was performed and ozyurids were found, but no hookworms. Leach concludes that carbon tetrachlorid given in 10 c. c. doses produced no ill effects and removed all hookworms and ascarids. Docherty and Burgess, however, conclude after experimenting on two condemned men that a safe maximum dose seems to be 3 c. c., since they have given it in these doses without producing any ill effects. They found that 5 c. c. and 8 c. c. given condemned men on whom autopsies were done produced lesions of the liver. They, however, agree that carbon tetrachlorid seems to be practically specific for hookworms, fairly efficient in the removal of ascarids, lumbricoidis, oxyuris and vermicularis, but of little value in trichuria.

Lambert, who is a medical officer of the Bureau of Ankylostomiasis, colony of Fiji, Siwa, Fiji, reported his observations in the treatment of twenty thousand cases of hookworm disease by carbon tetrachlorid.[7] He concludes that carbon tetrachlorid is a vermifuge and vermicide of great potency, permitting of rapidly treating at low cost vast populations. Re-examinations of 823 treated individuals lowered the infection rate of 100 per cent to less than 9 per cent. His dose for adults is 3 to 4 c. c. Alcohol is a contraindication. In a later article,[8] reporting the results obtained in a total of 50,000 cases, he reports three deaths following the administration of carbon tetrachlorid, which was subsequently found to be far from chemically pure. One death in a boy aged seven years followed 1.75 c. c. of the drug, one in a boy aged five years followed a dose of 1 c. c., and a third death was in a child aged six, dose not given. Symptoms in these cases were semi-coma, tympanic abdomen, enlarged liver, pupils dilated, knee jerks absent with occasional clonic convulsions and trismus. At autopsy, the liver showed very severe necrosis of the central and intermediate zone of the lobules. Approximately one-half to two-thirds of the liver substances had been destroyed. Lambert concludes in this article that carbon tetrachlorid has shown itself to be the best vermifuge for the treatment of hookworm disease, but emphasizes the necessity for a supply of the pure drug.

As the results of stool examination at Fort Benning seem to indicate that at least 13 to 15 per cent of the adult population is infected with hookworm, any drug which would lessen the time required to hospitalize those infected would be of material benefit. The reports above considered and available on the action of carbon tetrachlorid would seem to indicate that it was superior in its action to other drugs, requiring few, if any, days in hospital for those treated. With this in view about August 1, 1922, a small amount of this drug was secured. Carbon tetrachlorid is a clear colorless fluid, having the formula $C Cl_4$, specific gravity 1.629, molecular weight 1538, boiling point 76° centigrade. It has a rather penetrat-

ing odor, reminding one of chloroform and carbon bisulphid. Its taste is so sharp and burning that the drug was administered in 3 c. c. doses in gelatin capsules. No fasting was done before or after administering.

Soldiers showing a positive stool for hookworm are not now as a rule admitted to the hospital, but are routinely given the above dose, cautioned against the use of alcohol and instructed to return for stool examination within a week's time. Following the administration of the drug some of them experience slight dizziness which may last two or three hours, a slightly drunken feeling and a sensation of heat in the stomach. The preliminary results were recently published in the *Military Surgeon*.[9] Further observations on the use of this drug in hookworm infection have given equally good results. Out of a total of 156 soldiers treated without hospitalization each received one dose of 3 c. c. of carbon tetrachlorid, only five positive stools have been found after reexamination, one of these in a laboratory worker at the Station Hospital, who examined the stools sent to the laboratory. This man may have been reinfected. Certainly the results so far have been superior to any other drug treatment, so much so that carbon tetrachlorid is now being used exclusively in the treatment of hookworm disease. However, one must bear in mind that drug treatment is not the only important factor in the treatment of this disease.

Darling advocates a method of so-called mass treatment in hookworm control, i. e., to treat by a germicide all the people within as short a period of time as possible so that soil infestation can be rapidly terminated. Sanitation bears an extremely important part and the possibility of animal carriers is not to be neglected.

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PUBLIC CONFIDENCE AND THE MEDICAL PROFESSION*

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It is evident to all practitioners of medicine that there is a distinct but indefinable element of misunderstanding between the public and the profession. I do not necessarily mean that the public distrusts the methods employed by the average physician in accomplishing his ends, but, owing to the fact that many diseases do not respond to treatment, there has grown up a sentiment in the public mind, especially among the enlightened, that there is an inadequacy in medical treatment. This state of affairs has brought about a condition of misunderstanding which some medical men regard as a distinct issue.

As a direct result of this, there has been developed an overwhelming demand for the practitioner of new fads and cults. Inasmuch as the fundamental idea involved, upon which the cures are achieved, is largely a matter of belief, it is difficult to differentiate between what is obvious charlatanry and what possesses the elements of rational mental therapy.

A belief is not capable of proof; it must be blindly accepted or rejected according to a state of mind. Nevertheless, the fact is indisputable that organic function is influenced by cerebral activity and to deny that such is the case is to be impervious to the experience of every-day life. It is this form of therapeutics which the regular practitioner, though employing it unconsciously in his own work, consistently disregards. He, therefore, lets down the bars to the charlatan and the cultist, who reap their rewards both in results and in shekels.

The fault lies not with the public, who, it must be admitted, are very prone to believe that which appeals not to their judgment but to their sentiments, but with the doctor who is not wise enough to respond to this demand. This is the point of stricture between the medical profession and the public.

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Faddists and cultists deal wholly with that part of the mental machinery which drugs fail to reach. Mental healers, chiropractors, osteopaths, represent experiments which society, having in its judgment found material medicine wanting, makes for its own good. Dr. H. C. Macatee, of Washington, D. C., believes that they exemplify the failure of the medical profession to grasp fundamentals.

A therapy which is material does not touch the illness of the spirit. It stops short of the spiritual alleviation which is so often bound up with the restoration of the physiological functions. There is a distinct tendency to be discouraged with the work of the doctor as a whole. I am of the opinion that the sneering, cynical attitude has been the stumbling block in the way of a proper appreciation of spiritual values by the practitioner and believe that it behooves him to study the situation and regard it from a more receptive attitude. He should look upon the body not only as a collaboration between cell entities, but as imbued with something deeper, equally real, if less tangible and far less understood.

One angle involving the confidence of the public in the medical profession is the development of specialists. The average person is confused by their number and variety and fails completely to grasp the necessity for their existence. He does not and cannot know that the fundamental sciences of chemistry, physics and anatomy, and their application to physiology, pathology and therapeutics, are continually making advances into new realms of knowledge. He does not appreciate the fact that as medical science evolves, clinical art becomes more and more complicated, and that it becomes increasingly difficult for the mind to grasp even the multitudinous fundamental details, or that the very complexity has evolved branches for which long and intensive training is necessary.

Some prominent men deplore the rise of specialism while granting that its development is logical. W. J. Mayo says that "Surgery should be put back where it belongs, a means of mechanical therapy in conjunction with medicine. . . ." Osler, in 1919, saw the danger in specialism when he wrote that,

> "Specialism has fragmented the specialties themselves in a way that makes the outlook hazardous. The workers lose all sense of proportion in a maze of minutiae."

Mr. Average Man sees the specialist as a person who demands a high price for a small amount of service which to him bears no relation to the remuneration. The result is that the specialist is viewed somewhat from the standpoint of the profiteer. Miller believes that this specialism tends fundamentally to destroy those intimate relations between physician and patient that constitute the very essence of the healing art. The analogy between the medical specialist and the specialists of daily experience, such as the plumber, the gas fitter, the electrician, whose services are accepted without demur, is lost sight of entirely.

A criticism of specialism, according to Miller, is that it has been responsible for the development of what might be termed class discrimination in the profession itself by which the general practitioner has apparently lost caste. Applied to patients, it has also fostered a feeling of class distinction. The charge is that the medical profession, as a whole, has rapidly become an organized, financial institution, which I may add Miller believes is "untrue and unjust." What the medical practitioner thinks is another story.

Another phase of medical activity which, if trouble were taken to investigate, doubtless influences the attitude of the layman and collectively of the public, is the "group clinic" or so-called "group medicine." It makes him think, inadvertently perhaps, of the abattoir where the pig goes in *in toto* and comes out changed in form and anatomical relations. Once more we have the chief objection to which the specialist is liable, viz., that there is a lack of understanding between the doctor and the patient; the psychological element of sympathy between the two is not likely to prevail to any degree.

The case passes from hand to hand until it runs the gamut of the group and comes out diagnosed and possibly treated. The process is in principle a mechanical one and, however we may value the virtues of

the system or even the end results, the effect on the mind of the patient is not desirable.

This is not in any way intended to disparage the institution of group practice. It is justified in my opinion by its superior facilities for study and diagnosis. When these facilities are transferred back through the patient to his family physician, it seems possible that the mechanical routine features of the process will not engender the same attitude of mind as when the patient is referred to specialists unknown to him. Of course, all group clinics are not devoted to diagnosis alone. In fact, some are arranged for treatment as well as diagnosis so that the patient may remain long enough under the care of one of the attending clinicians to become acquainted and, therefore, a species of mutual understanding may be reached.

In the third and last phase of the people's relation to the medical profession, that pertaining to public health measures, I think we may define the attitude as one of indifference rather than of distrust. The public knows only too well what it owes to the efforts of state and municipal boards of health to distrust their activities. Public enlightenment along the lines of prevention has gone far enough to counteract any active opposition to very necessary measures. In fact, there would quickly be a loud clamor were a health officer remiss in his duty during a typhoid, smallpox or bubonic plague outbreak.

Yet the same communities which will demand vigorously that an epidemic be stamped out after it has gained a foothold will be luke warm, not to say perfectly apathetic, toward changes in sanitation which would have prevented it in the beginning. It is the old story of the oblivious ostrich with its head in the sand.

I have in mind the present epidemic of dengue, and I could also cite numerous instances of remissness to authoritative warning. The shout for help as a rule comes too late when people have neglected to clean up their back yards, put in sanitary toilets, screen their cisterns, oil their ponds or vaccinate their children. Much suffering, loss of time and often loss of life results from just such a situation.

There is one other angle of public health measures which, because of its peculiar relationship to the private life of the individual, deserves attention. This is the problem of combating venereal disease.

In a way it is not difficult to understand that people should be indifferent, not to say hostile, to any procedure which deals with a phenomenon not entirely devoid of a sentimental background.

Experience has taught us that we meet with comparatively little passive resistance so long as the reforms we wish to have established do not contain a personal factor which penetrates not only into the life of the home but into the intimate relations of the two sexes. Regardless of the necessity for sex knowledge, and especially that part which has to do with venereal disease, there exists an indefinite fear tinged with hypocrisy and prudery which precludes frank and open discussion. Then, too, there seems to be an altogether false attitude of mock chivalry on the part of legislators which make the passage of laws dealing with prostitution an impossibility. The banality of "interference with personal liberty" is the cry when an attempt is made.

It oftentimes seems that the people regard the campaign against venereal disease, with the legislation which was effective only on the basis of Federal pressure, as obsolete, to be relegated to the limbo of past events.

That venereal disease still exists and that prostitution, which is its chief source of propagation, has not been eliminated seems not to be appreciated. Furthermore, it is neither known nor appreciated among the masses just what terrible havoc these diseases produce, and it is exceedingly difficult to make them know, because they seem not to want to know.

Of the two sexes one would surely expect women to be especially interested, because the great burden of destruction falls most heavily upon them. The explanation is that the intelligent part of the population is not mentally prepared because of prejudice, education or religious bias to receive the facts.

It, therefore, seems to be a question of time, propaganda and "watchful wait-

ing" for loopholes to offer opportunities for home thrusts, such as occur during times of epidemics before progress can be resumed.

As Miller very wisely remarks,

"The philosophy of medicine implies a cheerful acquiescence to the burdens of the day. It inspires the unfortunate and cheers the depressed. It teaches how to encourage the hopeless as well as the suffering. It provides courage and fortitude with which to meet sorrow and disappointment. Lived up to, it inspires a geniality of soul and tolerance for the opinion of others."

And I may add it is the philosophy which the doctor must of necessity accept if he wishes to keep the confidence, the sympathy and the affection of the public.

He cannot either financially or otherwise afford to act and speak contrary to the spirit of the times. It has been said that the practitioner is able and willing to give to the public far more than it demands. This is strong indication that he is ahead of his time; that the people, as a whole, have lagged behind and that general education has not kept pace with scientific education, that it does not prepare the public to understand great natural truths. In the last instance the mass is the arbiter of the destiny of the individual and willy-nilly the physician must bow to a demand which is beneath what he could supply.

The solution of the health problem and of the problem of public and professional relations is therefore not involved in difficulties which are incapable of solution.

I should say that both are analogous to two algebraic equations whose unknown factors are dependent upon those intangibles of every-day life which we commonly call confidence and understanding, confidence in the worthy motives of the doctor and understanding of the public's desires. It is in a coalition of needs with confidence and understanding that the solution lies.

DISCUSSION

Dr. W. S. Leathers, University, Miss.—All of us realize that at this time there is a great deal of reform going on within the ranks of the medical profession. In the ranks of the medical profession there is a feeling that the objectives of the general practitioner are being gradually and definitely changed. There is being developed within the ranks of the profession what is being termed "Group Medicine." There is also being emphasized an extreme form of specialization or, I might say, specialization in a much more extensive way than heretofore. There are physicians who are devoting their entire time to diagnosis, others to x-ray work, others to laboratory work, others who are specializing in surgery, in pediatrics, or in eye, ear, nose and throat. Indeed the field of medicine has been so broadened within the last quarter of a century that it seems almost an impossible task for a physician to devote himself to general medicine.

It is also true that during the past twelve years the prevention and control of disease has been more largely emphasized than during any corresponding period in the history of medicine. There exists at the present time among medical men a kind of unrest which is doubtless due to a number of things, but there is a tendency on the part of a limited number of physicians to account for this as due to public health activities which they think are detrimental to the profession. It is certainly a fact that the cause of the unrest among the medical profession is not being properly accounted for and, as a consequence, it is being explained on the basis of false issues.

It should be realized that those who are engaged in public health work constitute just as truly a part of the medical profession as those who are doing other lines of work. They are, therefore, just as much concerned in conserving the rights of the medical profession as any other group of physicians. The departments of health are the heritage of the medical profession, and every effort should be made on the part of the physicians of the country to maintain and sustain health organizations in the prevention and control of disease. There can be no question about the fact that it is the duty of the physician to assume a definite responsibility in this respect and become a part of the machinery of public health work.

The profession of medicine is too great an organization and has rendered too large a service to humanity for any serious conflict to occur between the profession and the public. Therefore, the attitude we should assume in public welfare movements should be liberal, broad-minded, and public-spirited.

Dr. Roy K. Flannagan, Richmond, Va.—What Dr. Leathers has said is true. No one has succeeded in keeping back the tide, though that has been an experiment of reactionaries as long as humanity has existed. It does seem to me a very poor business for the medical profession, with all of its enlightenment, to be fearing for itself because public health work is beginning to make inroads. Every enlightened doctor knew that public health work would make inroads upon his practice, though not necessarily upon his income. The very first principle of the public health man is that sickness must go. Now, why should doctors get panicky if it is necessary for public health officials to organize clinics of this sort, that sort, or the other sort, to take up the slack, to deal with people who would never be

looked after otherwise? Put yourself in the place of the public for one moment. Here are John and Mary and Jane and Tommy, who need attention. They will never be looked after. Who is to look after them? The doctor? Well, the people have no money to pay the doctor, so they go to the public health officer, and the health officer must do something about it. That situation will get worse before it gets better. Clinics must be formed, and it seems to me that the proper attitude of the medical profession is, as Dr. Leathers said, not to be fearful or afraid about the consequences of its own altruism. Its members started public health work, and they must take the consequences. Certainly the enlightened ones will back up public health to the limit, and wherever it leads I believe the profession will follow.

Dr. K. E. Miller, New Orleans, La.—Dr. Flannagan says that public health work is in conflict with the work of the medical profession, and that this is where the trouble comes. He says virtually that public health activities will take the bread and butter out of the mouth of the physician. Of course, so far as a few certain diseases are concerned, public health work has curtailed the work formerly done by the practicing physicians, as, for example, typhoid fever, malaria, and the like. But the work they lose is very small as compared to the increased business that comes to them by reason of local health work. If you analyze the program of a local health department you will see that the major portion of it plays directly into the hands of the profession. Take the school medical inspection work, for instance. We find children that need treatment. Who is to treat them? While we organize some few clinics, of course, and take care of a few children who would not otherwise get treatment, the effect of that clinic is in the nature of a demonstration as to what relief from physical defects means, so that correction of defects is popularized or advertised, with the result that the vast reservoir of defectiveness begins to move toward the practicing medical profession.

The same thing is true of the infant and maternity problem. The effort now is to see that the women get proper prenatal care, get proper attendance during the period of childbirth and puerperium. It is to the interest of the medical profession that the babies, after they come into the world, get into the hands of practicing physicians, well qualified men, whenever any danger arises. Our whole machinery tends to educate the public to get into the hands of the medical profession.

Take life extension work as another illustration. We know that the proportion of deaths from communicable diseases is coming down. On the other hand, the proportion of deaths from the so-called degenerative diseases is going up. Our whole object in the life extension work is to educate the people to go to the doctor while there is time to do something.

So it is throughout the entire program. Greater use of the medical profession on the part of the public is the dominant refrain in public health work. If we ever expect to develop a good feeling and cooperation between the profession and public health, we have to show them that the interests of the two are almost identical.

Dr. James A. Hayne, Columbia, S. C.—The great difficulty about the medical practitioner of the present day, the graduate of the present school, is that he has forgotten that medicine is a profession, that it is not a trade, not a money-making business, but that it is something he goes into as a man goes into the ministry, for the purpose of helping the public. The attitude of the laity at the present time is that they are being charged outrageously for very small services. Why do the public distrust the medical profession at the present time? Distrust of the medical profession is the attitude of a very large portion of the laity. Our American Medical Association to the laity is known as the greatest trust on earth, a trust that has actually gone as far as other unions to limit the apprenticeship by putting such a number of years on the man who wants to get into it as to require usually an enormous expenditure of money and four or five or seven years before you can make a medical man. The American Medical Association went on record in St. Louis for four things: first, that it is absolutely opposed to clinics of any description, whether subsidized by the Federal Government, by the states, by volunteer institutions, or by anyone else. Why is it opposed to clinics? Because this might hurt the profession's pocket book. The second is that the Association is in favor of the United States Government's taking charge of the liquor business. Third, it is opposed to the Sheppard-Towner act, because the act supplies money which may prevent the mothers and babies of the United States from dying.

That is why the medical profession is distrusted by the public. Why did this occur? Because in our building up of the American Medical Association we neglected to follow the fundamentals of constitution building laid down by the forefathers. States with a large number of practitioners can completely outvote and stifle the representation from states like North Carolina and Tennessee and Alabama. States like New York, Massachusetts and Pennsylvania have enough representation to outvote all the altruism of the South and West. There is absolutely no balance in the American Medical Association. It is simply a means by which the profession of New York and Illinois can express their egoism.

Dr. L. B. McBrayer, Sanatorium, N. C.—Men engaged in public health work should take serious account of the supposed friction between the people and the medical profession and between the medical men practicing for a fee and public health work. As Dr. Dowling so well said, the practice of medicine today is in a state of evolution, and I think that is a good omen.

Dr. Hayne, I think, ought to go to the United States Senate, and if I were living in South Carolina I would try to send him there. But Dr. Hayne's enthusiasm sometimes runs away with him. There is a tendency on the part of some

people to decrease the course of study of the medical student. They are fishing, you might say, for some way to get a person like a sanitary inspector, who will live out in the country with the folks and give them medical attention.

Medicine is quite different today from what it was even twenty years ago or thirty years ago, but there is a tendency to practice medicine today in the same way we did thirty or forty years ago, and the people are not going to stand for it. We are not using today in the practice of medicine the knowledge that medical science has brought to us, but are going along, many of us, as we did many years ago, and that is the thing to which the people object. A layman in my State said to me within the last few months, "I do not know what in the world we are going to do about the general practitioner. It looks to me as though we shall have to cut out the general practitioner altogether and employ specialists." He was groping for a way to have his people taken care of. Another prominent layman said to me, "Medicine is a science, but the practice of medicine, the application of medicine to the individual patient, is an art, and we have a great many mighty poor artisans in the medical profession."

I was talking to a well educated physician about this very thing and said to him, "Why don't you practice medicine in this town as it ought to be done?" He said, "I do not believe folks would follow me. I do not believe that I would get enough practice to make a living."

Now, the group medicine that we praise and condemn is an effort to do this very thing that is lacking in the medical profession, to examine the patient properly and give him the proper treatment. We have a patient in our Sanatorium today who has had two laparotomies, one for appendix and one for an ovary, and nothing was wrong with either. That is true too often.

Most of the friction that comes between the public health workers and the medical profession is due to lack of understanding. The medical practitioner has gone along without paying much attention to public health work, and does not understand it. The friction between the people and the medical profession is because the people are not getting from the medical profession what they are entitled to. They are groping for it, and a large number of them are being treated by the various cults that have sprung up.

Dr. Dowling (closing).—I agree with Dr. Leathers that when there is a better understanding between the doctors and health departments the health departments will have better cooperation. My experience has been that when doctors are taken into the confidence of the health department they are no longer opposed to the work the board of health wants done.

I believe that if we will take the people into our confidence and give them the service we should, we shall have a better, healthier and happier people.

One thing that we must educate the people about is making provision for the health departments. I found that a city was spending 22 cents per capita for health work and more than four dollars per capita for police and fire protection. I made the point that if they spent more for health they would be better satisfied and happier, and would not need so many policemen and firemen and so many courts, for they would not be burning up their homes and getting into trouble requiring the police.

SURGERY

RAILWAY, INDUSTRIAL, GYNECOLOGICAL, OBSTETRICAL AND UROLOGICAL

ANKYLOSIS AS THE TRUE CURE OF DESTRUCTIVE JOINT TUBERCULOSIS*

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My principle idea in presenting this paper is to bring into discussion some of the methods of treatment of the more severe cases of joint tuberculosis. We ourselves are, in some degree, ancestor worshippers, and we show it by our blind adherence to the rules of our medical forefathers.

In the treatment of bone and joint tuberculosis, the problems which are presented in the acute or early, and in the late or convalescent stage, are quite different. The principles of treatment employed to meet these needs are well understood and are easy to apply. In the early stages, the general problem deals with the attempt to preserve the function of a joint already attacked by a destructive disease, and all efforts are directed toward the arrest of the process before serious destruction has occurred, with the hope of preserving the usefulness of the joint. In the second stage, the disease has already destroyed the essential structures. We are, therefore, dealing with the remains of a joint in which normal function is not possible, and the problem concerns obtaining the best substitute for the lost joint, considering safety, permanency and practicability.

Experience has shown that in the early stages of tuberculous joints the disease may sometimes be arrested and the function of the joint preserved, in which case subsequent repair may be sufficiently complete to restore the joint to a useful status. But to obtain this result it is necessary that the arrest be made in the early stage of the disease, while there is still sufficient integrity of the joint to endure the added weight and strain of the more active life of later years.

In the past, there has been much controversy in regard to the relative value of different methods which should be used to accomplish this result, and the discussion has mainly been confined to the advocates of traction on one hand, and of fixation on the other. The claims made by the advocates have each been so definite, particularly as regards the results obtained, that one must come to the conclusion that these results are as much due to the intelligent and thorough application of the treatment as to the intrinsic value of either.

In carrying through a campaign of treatment the most important consideration deals with the decision as to in which cases, and at what time it is best to apply, methods which in themselves have stood the test of time and experience, rather than the blind adherence to any special method. For instance, in the acute stage, with spasm and pain prominent, and deformity increasing, the demand is for rest and for the application of those principles which have been proved by experience to relieve these symptoms. There is no treatment to which the symptoms respond so quickly as to that of definite and accurate traction. On the other hand, in other stages and with individual cases in which these symptoms are slight or absent, traction is not demanded; rather fixation, which may be then sufficient to supply the requisite amount of protection. But, whatever means may be used, it is essential to keep in mind at this time that the ultimate object is to obtain an early arrest of the disease before the destructive process has made enough of an invasion to impair the integrity of the joint structures. We know, unfortunately, how seldom this result occurs when the disease is once established, and it is, therefore, important for the intelligent conduct of cases to recog-

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nize when the stage has terminated, for then the ultimate aim of the treatment becomes distinctly different, although, perhaps, there may be no immediate change in the methods employed. In the one, the aim is to obtain a joint which retains the structures, which are essential to freedom of motion, such as unimpaired cartilage, normal contour of the joint lines, elastic capsule, etc.; in the other, in which these structures have been destroyed, and in which a joint allowing normal function no longer can be expected, the object must be to obtain as a permanent result a limb that will stand stress, and this result at the earliest possible date that is compatible with good treatment. In other words, we should not in this later period of the disease treat symptoms alone.

There is but one result which can be considered as an absolute and safe cure of a tuberculous disease which has passed into the destructive stage, viz.: bony ankylosis, in whatever position is most desired. The joint which has healed with a few degrees of motion (of very little added convenience) is under constant liability to repeated strain, limiting the capacity of the individual, giving frequent periods of disability. Accumulated experience gives the uniform judgment that such a joint fails to respond to the strains which are put upon it in later life, and must be looked upon as a source of danger. The patient is finally brought to a choice between, on the one hand, a life of very limited activity, and, on the other hand, a radical operation. Such a result often comes after a very long period of quiescence, perhaps after some years of limited activity, with an occasional mild attack of acute symptoms. The apparent cure may come after a long period of treatment, conducted tentatively, waiting for enough cicatrization and walling off by fibrous structures to allow the joint a beginning use, and in the end the imperfect remains of a joint results. Recognition of this fact emphasizes the need that the treatment should always have in mind a permanent and secure cure rather than a compromised result, which may carry the patient over the few years of moderately active life, but will not stand the strain which comes with increased activity, weight, and perhaps lessened resistance.

We know that an actual cure by ankylosis can take place. We must, therefore, ask ourselves whether too often we do not satisfy ourselves by meeting the present conditions rather than having in mind the future life of the individual. Our important question is, after the early period is over, Is ankylosis taking place? is the case progressing toward a secure and safe result which will stand the strain of later years, or, on the other hand, is the case only passing into the stage of quiescence of symptoms which will compromise the future active life of the individual? The object of the treatment should be to insure, in these destructive cases, our end result of bony ankylosis at the earliest possible period, and in those instances in which ankylosis is not taking place, the question of operation to bring about this desired result should be considered. In this relation, two types of cases exist.

(a) In which the area of disease is not directly attacked, and in which the operation is performed with the object of aiding Nature in producing an ankylosis. To illustrate this type, caries of the spine may be used.

With the exception of rare instances, tuberculosis of the vertebrae progresses to a distinctly destructive stage. Occasionally a case may be abortive and the function of the spine, as regards its mobility and ability for weight-bearing, may be distinctly preserved, but, in the usual case, the destructive process has invaded more than a single vertebrae, and a true bone ankylosis must be considered as the desired end result. Conditions which are necessary to obtain a true ankylosis in spinal caries cannot be definitely stated, but they are probably determined largely by the character as well as the amount of destruction of the parts of the bodies. In certain cases, ankylosis occurs spontaneously in the course of convalescence (See Fig. 1). In others, even under the same conditions, a true ankylosis apparently does not and perhaps cannot result. One must not be deceived by mistaking the early stages of quiescence in the convalescence as the actual occurrence of anky-

losis, for frequently symptoms may have so completely disappeared as easily to deceive the observer. The amount of time necessary to insure complete ankylosis would, necessarily, depend on the amount of destruction, the presence or absence or the amount of suppuration, and the general conditions favorable to repair. And this is true under all methods, equally of operative and of conservative means (See Fig. 2).

Fig. 1.—Old specimen of caries of spine showing a complete bony ankylosis. Destruction involving four vertebral bodies. Case illustrates the possibility of complete bony ankylosis by spontaneous cure without operation. Case must be considered as the type of true cure of destructive bony tuberculosis.

Fig. 2.—Tuberculosis of the bodies of the vertebrae with complete absorption and without extension of the destructive process to the contiguous vertebrae. Case represents the disease in childhood, early. At present without symptoms while wearing firm support. Case not in any way to be considered as cured or even safe without treatment by complete fixation. In view of the intact condition of the contiguous vertebrae, operation for ankylosis of the posterior portion of the column may not be necessary.

In the choice of operative treatment, when compared with or pitted against the conservative treatment, with the object of obtaining the same ultimate result, the reasons should always be considered for choosing the operative rather than the other, and the ankylosing operation should then be considered as the necessary adjunct to the other mechanical forms of treatment to aid in the same way as does mechanical means in placing the spine under favorable conditions for rest and healing. The object of the operative treatment in caries of the spine is distinctly different from ankylosing operations for the same disease in all other joints, for the reason that it must be used with the purpose to give an added mechanical means of support, and thus indirectly aid Nature to bring about those desired conditions which favor ankylosis, but without interfering with the diseased area; while in the operation to produce ankylosis in other joints the area of disease is directly attacked and the operation is performed purely with the object of producing an ankylosis at the site of operation.

In children at least, the conditions of environment must play an important part in the determination of the methods of treatment, for under proper conditions giving rest, protection, hygiene and time, a true cure may result. When all of these can be provided it should be a question carefully considered whether other than conservative treatment should be instituted.

The element of time is a factor in the environment. Experience has shown that operations directed toward producing ankylosis of the posterior part of the spinal column shorten the necessary time of

Fig. 3.—Incomplete ankylosis in case of extensive disease of the spine involving bodies of four vertebrae. A portion of the intervetebral disc is caught in the area of the disease. Ankylosis not complete.

treatment by mechanical support and fixation. In cases in which this time cannot be given, particularly if adequate support and fixation cannot be provided, operation is distinctly advisable. But the operation must be considered as only one feature of treatment, and not a substitute for the more important features of mechanical fixation and support. Moreover, in no way does it in itself prevent the increase of deformity.

However, in a certain number of cases a perfect ankylosis does not occur, and this may not necessarily be due to the lack of early persistent and thorough mechanical treatment. Clinical x-rays and the museum specimens all give evidence of imperfect ankylosis. Such cases are not secure and not safe for active life. It is probably not possible to define the conditions under which ankylosis does not take place. It is undoubtedly influenced, in part, by the degree of aposition of the fragments, the amount of intervertebral discs remaining as a foreign body, in many cases in the same way that fibrous or muscular tissue becomes interposed between the ends of the fragments of a broken shaft and thus prevents union (See Fig. 3). In any case, the condition can be studied by the x-ray and its progress determined. A failure of the development of ankylosis, not only eventually but during the course of the disease and after a sufficiently long quiescent period, must be considered as a distinct indication for operative interference in cases of caries of the spine.

In adults the problem is different and is more simple. True ankylosis rarely occurs in disease beginning in adult life. Mechanical treatment is always prolonged. Favorable conditions of environment are more difficult to control, and for these reasons operative measures are more generally indicated.

(b) In the second class of cases the area is directly attacked and the operation is done with the object of producing an ankylosis at the site of operation. For illustration of this class, disease of the hip joint may be used.

Passing from the first stage, in which there has been no actual destruction, and in which a functional joint may be hoped for, to the second, in which there has been an actual loss of structure, and the hope of preserving the function thereof is lost, the treatment must necessarily change in its aim, even if not in its methods. With whatever method may be used, one should question whether or not at the end of the treatment, perhaps of many years, a pure ankylosis is to be the final result. If so, the treatment must necessarily be consid-

ered as proper and efficient. On the other hand, if, after many years of conservative treatment, the patient is to be left with an imperfect ankylosis, a joint unstable and unreliable, although quiescent, one which eventually will fail to respond to the added stress of later years and remove the individual from an active life, already established under false pretenses, then the end result cannot be considered as successful. In these cases there should be considered the question of radical operation to insure the desired end result in regard to: (1) the necessity of an ankylosis operation,

Fig. 4.—Old hip disease with destruction of the head and partial destruction of the acetabulum. A portion of the remaining head and neck in the old acetabular area. Fibrous ankylosis only. Case must be considered as vulnerable, presenting the danger of lighting up of disease with use. The only cure which can be considered as complete in this case is that of ankylosis.

and (2) the period in the course of the disease when it may best be done.

The following case will serve to illustrate this principle:

A man of 32, in good general health, a subject of old hip disease in childhood, applied for advice. The history was that of an ordinary attack of hip disease in childhood, with abscess formation, treatment by traction for many years, gradual disappearance of all symptoms, and a gradual resumption of the use of the leg during the later 'teens. At this period the patient was able to carry on his ordinary play and occupation and even engaged in some of the sports, as, for instance, pitching for the baseball team at school, apparently without restriction, and certainly without discomfort. At the age of 28, when engaged in clerical occupation, he began studying in night school, in addition to his day duties, and so continued for four years. The strain of this continued work, day and evening, finally showed itself in the deterioration of his general condition. A rather slight strain of the hip persisted in its symptoms, pain soon developed, and the old sinus reopened. The hip became and remained sensitive, enough to necessitate a cessation of work. At first the patient was able to walk a little and the hip showed a general condition indicative of a strain of an old joint rather than a lighting-up of an old disease. The disability gradually increased, and when seen the

Fig. 5.—Old tuberculous disease of the hip with destruction of the head and part of the acetabulum. Portion of the remaining head and neck in the old acetabular area. Ossification incomplete. Fibrous ankylosis. Impingement of the trochanter against the side of the ilium giving additional danger on account of the pry with the abduction of the leg. This case developed nearly complete disability after several years of moderate activity. Treatment should be that of operation for arthrodesis to produce a complete bony ankylosis.

patient was incapacitated for work.

Examination showed a leg in good position, short, allowing a very few degrees of motion and no thickening anywhere about the trochanter or about the joint. The x-ray showed an imperfect joint, no actual ankylosis, but a fibrous union between the irregular-shaped remains of the head

and the irregular remains of the acetabulum. There had not been sufficient destruction, and there was insufficient vitality to bring about a union, or perhaps the traction itself too long continued had given enough of separation of the fragments to prevent their union.

The history of this case is too often duplicated. It was a supposed cure of destructive diseases, which consisted of the establishment of the stage of prolonged quiescence with incomplete repair, allowing the resumption of a limited and temporary amount of activity, but with a final breaking down of the functions of the joint. A permanent result was not given to the patient, and this certainly cannot be considered as a cure. The operation which finally was necessary could have been done in the latter stages of convalescence, and the patient could have been given his permanent result many years earlier (See Figs. 4 and 5).

Another case in point illustrates the opposite in the desired result.

A case of hip disease began at the age of 10. It was acute, severe, and extensive. He had deformity, multiple abscesses, at one time thirteen sinuses, which required active treatment for several years. Later, on account of the social environment, active treatment was not carried out, but the patient used crutches for some years. They were then discarded and he took up a rather active occupation in his latter 'teens. This case was not seen for about fifteen years. At this date, the patient was 33 years old, well, active and had pursued an active life for fifteen years. He had had no symptoms, even with stress of work, and for a long period had worked sixteen to eighteen hours a day. The sinuses had closed at about the age of eighteen or twenty and had not reopened. The patient had a firm, bony ankylosis of the femur upon the ilium. The active and extensive disease had been followed by conditions favorable to a bony union and the head had not suffered enough destruction to offer too small an opposing surface on the ilium for a firm, bony ankylosis.

The one case illustrates the result which should be avoided and the other the result which should be sought for.

In the quiescent stage, after extensive destruction, the aim of the treatment in providing protection during the convalescent stage should be to aid in the final establishment of a true ankylosis. With the passing of the spasm, pain and increasing deformity for which rest with protection is demanded in these cases, and in which definite destruction has occurred, the object must be to bring the joint under those conditions which will favor this end. These conditions are apposition and rest, and the object then should be to allow the surfaces to come into contact with the best position possible at this time. We find, at times, our firmest ankylosis in cases which have had little treatment in the latter periods, although frequently the ankylosis is in unfortunate positions. If traction is too long continued, the object of treatment, namely, the apposition of the parts, is defeated by using the methods which are ordinarily employed to prevent union. When the general relations of the remains of the neck and the acetabulum have been maintained, the fixation of the joint is to be desired. At times it may be necessary to bring the leg into abduction to prevent the too great slipping upward, and again it may be advisable to allow the slipping by, because of the extensive or active process. No definite rule of action can be directed. The contention can only be that the ultimate result must be kept in mind during the quiescent stage and measures must be taken to obtain this end.

Not always is it to be expected that ankylosis will result spontaneously. Before discharging a case of this type, however, the question of giving the patient a secure result is to be considered. If the correction of deformity is to be considered and an imperfect ankylosis exists, the correction of the mal-position by arthrodesis rather than by osteotomy should certainly be chosen, when the structures are such as to allow this procedure. On the other hand, when the position of the limb does not call for correction, but an imperfect union exists as in the type already shown, the producing of ankylosis instead of sending the patient out into life with an unreliable joint should surely have careful consideration (See Fig. 6).

We know that ankylosis can be obtained in these cases. We also know that in the destructible cases less than bony ankylosis gives an insecure permanent result. Pure ankylosis, therefore, must be regarded as the ultimate and permanent cure, and anything less than this must be considered only as a stage in the convalescence, without reference to the length of time of treatment.

It may not always be possible to determine just when an ankylosis will occur, or in which cases an ankylosis may be expected. On the other hand, it is quite possible to determine during the long period of convalescence, and during the period of quiescence, whether or not the conditions present are likely to result in a bony union or a false joint. The question of operative interference to bring about this end result at a proper period, with

Fig. 6.—Old and extensive tuberculous disease of the hip. Destruction of the head and part of the acetabulum, but without complete ossification in the area of the disease. The case in the present stage, showing development of probable fibrous ankylosis. This case must be considered vulnerable and liable to strains in later life and one in which operation for arthrodesis should be considered before the cure is complete.

our increased methods of examination, should always be considered. Operation to produce an ankylosis is not justifiable in young children other than that for ankylosing the posterior part of the vertebral column. Neither can we say that the continued and prolonged seclusion and restriction of a patient necessitated by the treatment by apparatus, etc., unless it is to have the desired result, is justifiable. The case is more clear in adults. Disease originating in the adult period seldom results in bony ankylosis, and the period of seclusion and isolation is, in these people, one of greater importance and greater care should be taken to avoid this.

(1) It is not to be considered, however, that ankylosing operations are always necessary or even justifiable in destructive tuberculous disease. To promise success, there must be enough of opposing body surfaces to afford a sufficient area for a strong union. In certain cases of hip disease with extensive destruction, the

Fig. 7.—Old hip disease with complete destruction of the neck and nearly complete destruction of the acetabulum. Subluxation of the trochanter upward. The two opposing bony surfaces not directly involved in the original disease. A false fibrous joint allowing a large amount of motion. This joint has capacity for a definite amount of function, since the motion does not involve the old area of disease. This case illustrates a case in which bony surfaces do not present a sufficient area to obtain a firm ankylosis. Operation for arthrodesis is not indicated in cases of this type.

head and neck practically disappear, leaving the trochanter and perhaps a very small fragment of the neck, with the acetabulum so destroyed that it no longer presents a cavity of any depth. In these cases the trochanter is usually found well above the level of the acetabulum and opposing itself on or opposite the portion of the ilium just above the acetabulum,

which has not been a site of disease. The fibrous union of the two at this place is strong, sufficiently so to bear the weight of an ordinary individual, and a result of this kind usually permits a decided amount of motion, since two old diseased surfaces are not in contact, but rather two surfaces are opposed which have not been the site of disease, i. e., the top of the trochanter and the side of the ilium, and have, therefore, their normal covering (See Fig. 7). There is not the danger of strain, since the motion is sufficient to reduce the danger which comes to immobile false joints. On the other hand, there is not sufficient good bony surface in these cases to promise a firm ankylosis by operation.

The problem which confronts the surgeon today is quite different from that in former times, for the opportunities to obtain accurate knowledge along the course of a progressive case were never before so ample. One cannot be satisfied with a joint which is unstable and unsafe after long years of treatment, if, with beginning use, some radical measure is necessary to insure, at the late period, a safe and useful member, when the same or some radical treatment at an earlier stage would have given the same end result without the long period of restriction and seclusion. Decision for such a course of treatment was not possible before the perfection of the x-ray and other laboratory facilities, when the actual condition of the bony structure could not be determined and followed along in the course of the disease. But, with the perfection of these means, a new responsibility is now placed on the medical advisor, and it is necessary that he readapt his principles and accept responsibilities that could not have been placed upon him formerly.

The indirect but important and sometimes serious results of long conservative treatment are too often lost sight of until too late, and the lesson which intrudes itself while working among these cases is the need of clear foresight, looking toward final results, trusting that by the early recognition of these facts we may arrive at a decision in regard to the treatment which will not have too much the flavor of a compromise.

DISCUSSION

Dr. G. E. Bennett, Baltimore, Md.—We in Baltimore have been confronted with this problem and we have attempted an experiment upon a few children, taking very bad cases of fulminating, suppurating tuberculosis and attempting to produce ankylosis. Those cases seem to be doing very well.

Dr. Brackett showed one picture of complete destruction of the head and neck of the femur, with only a small part of the trochanter remaining, and said that these gave very satisfactory joints, and did not, as a rule, require attention, being very useful. That is quite true, but I do not believe that all are satisfactory. Some cases with the trochanter up under the gluteal muscles present a problem which I have not been able to solve. I have attempted to ankylose several, in order to do away with the hip strain which people develop when they are about thirty-five. I have two such cases now, and the best I have been able to get is a partial ankylosis, with some improvement. I would like to have Dr. Brackett tell us what he thinks of operating upon that type of case.

Dr. Frank D. Dickson, Kansas City, Mo.—I have been confronted from time to time with a condition of which Dr. Bennett has spoken, that is, practical destruction of the head and neck of the femur, with dislocation upward, which I have not been able to cope with to advantage. Dr. Brackett's paper is one that we shall go home and think about and discuss later rather than now.

Dr. Willis Campbell, Memphis, Tenn.—A point which we should consider carefully is too long traction. Dr. Brackett also emphasized this point: that after the acute symptoms have subsided, and where we are sure that the disease has reached the second stage, and we are certain that the joint will be destroyed, we should continue fixation but absolutely without traction. In my work I use heliotherapy, as some of you know. I have used it for a great many years and in a great many cases. I find that heliotherapy has a definite effect on the evolution of the pathological process. In practically all of the cases treated by heliotherapy, I do not mean over a short space of time or half carried out, but treated over one or two years, at least, we practically always have bony fixation, with an arrest of the active process.

Dr. E. Laurence Scott, Birmingham, Ala.—The spine cases usually come to us with some deformity. I remember eighteen years or so ago they were being treated in marked hyperextension. Now the tide has turned toward ankylosis. I would like to ask what Dr. Brackett does with the case that comes in with a mild hump.

Dr. F. W. Carruthers, Little Rock, Ark.—I wish to ask Dr. Brackett what procedure he would advise in children of about the age of ten or twelve who have a marked deformity, adduction with fixation.

Dr. Wyatt S. Roberts, Birmingham, Ala.—At the Children's Hospital in Boston, in 1916, we requested all the cases operated upon for tuberculosis of the spine to come back for observation. We were able to get fifty-five to report. These had been operated upon under the age of ten, and out of the fifty-five only one had been definitely improved by operation. Before ten years of age, in the usual run of cases, an operation for ankylosing the spine should not be performed. On the other hand, this operation offers much in older children and adults.

Dr. J. K. Simpson, Jacksonville, Fla.—Do the early symptoms of spastic paralysis in these cases make any difference in the indications for operation? Does that fact enter into the decision materially, or not?

Dr. Brackett (closing).—In treating these cases, difficult, prolonged, many of them distressing, we frequently carry them over the acute stage, and after the disease has become quiet we are satisfied to leave them in the later periods of convalescence and to consider this as the stage of cure. If we are to carry our treatment to completion, we must look at the end results and consider their condition when they become adults. The adult cases are constantly returning, perhaps more and more so, and the lesson is ever being forced upon us how imperfect early treatment actually has often been. Many of these people return, quite out of commission permanently, or until some radical operation has been done, while, on the other hand, they could have been made useful members of society if, at the proper time, the end result had been considered and the proper treatment had been carried out. This probably would have been the case if, in the course of treatment, the end result and the final life of the individual had been kept in mind as well as the condition at the immediate time of the treatment.

In regard to Dr. Bennett's question, I did not mean to make a statement which would have quite so general an application. Certainly the question which he has raised is very pertinent. No one type of treatment is uniformly, or can it be uniformly applicable. The kind of joint referred to is quite capable of giving a useful leg with motion, because in that case there are two bones, undiseased, opposed. (See Figure 7). This statement, of course, applies to those cases where there has been a complete destruction of the head and the neck with a dislocation of the trochanter upwards, so that the trochanter is practically articulating by a false joint on a portion of the ilium quite above the site of the disease. In such a case there exists a false joint which allows, under ordinary stress, a useful leg. In other cases, perhaps more extensive, the trochanter itself is invaded, and this type presents a much more difficult case to treat. These are not the conditions which are necessary for a firm fibrous union, and on the other hand there is not enough surface for ankylosis. We have all had the experience which Dr. Bennett mentions. Personally, I have never had satisfactory ankylosis with this type of case. The bone is fragile, is not good healthy bone, and there is not sufficient bony area to form a firm arthrodesis. Often a fibrous joint is better, provided the sinuses may be closed. Otherwise, one should never attempt an operation on these cases.

Dr. Campbell's remarks suggest a thought which we should take home with us. He has raised a point which needs elaboration. We have in the early stages, with existing spasm, pain and increasing deformity, no treatment which is so accurate, direct or successful as traction, and I believe we should apply traction continuously so long as these symptoms exist. When these symptoms have receded and there is no longer pain or increasing deformity, we have but one thought: to bring about ankylosis as quickly as possible. If we apply traction to these cases continuously, keeping the involved surfaces apart, we are accomplishing the opposite of what we really wish, viz.: contact for bony ankylosis. If, on the other hand, we remove the traction and allow the bones to come together and permit the muscles gradually to bring these surfaces into contact, we introduce the conditions for an ankylosis, and therefore this should be considered.

In regard to treatment of spinal disease in children, with the object of diminishing deformity, I believe our course should be clear, for we should never, more than possible, separate the bodies for the sake of the position of the spine. Our aim is to obtain our ideal end result, and we know that a strong ankylosed body, or series of bodies, with a certain amount of deformity, is a better result and allows a more active individual than an unankylosed area with less deformity. This does not mean that we should try to increase deformity or not to prevent it, but we should try to bring about as quickly as possible an ankylosis, and for such ankylosis we must have contact of bony surfaces. The operation for ankylosing the spine is not an operation for directly ankylosing the disease area, but merely to supply an added mechanical support. In children, and in cases which can be given ample time and proper environment and thorough treatment, it is wiser to delay operation until the older age. As was determined by the Commission appointed by the A. O. A., the operation apparently does cut down the acute period, and therefore saves time. In some cases this is certainly an important consideration.

Some one has asked about the reduction of deformity in a child of twelve years with a quiescent hip, but with marked adduction and flexion, in the stage of quiescence or fibrous ankylosis. I remember very well that I asked Dr. Schoffer, of New York, that very question, and I have always remembered his wise answer, which was: "I believe we should treat our cases so as to heal them as quickly as possible, irrespective of deformity, and when we have ankylosis correct the deformity." If we have developing and increasing deformity, we should then have in mind the operation, even if we know that later it will have to be repeated. But unless there is an increasing deformity of the spine as a result of the leg deformity, we should wait until the child has obtained his growth before operating.

CONCLUSIONS AFTER SIX YEARS' USE OF RADIUM*

By E. Dunbar Newell,
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Chattanooga, Tenn.

In our Clinic, radium has long been an adjunct to surgery. We have employed it with the instinct of the surgeon and not as radiologists primarily. Where we found that radium would improve our surgery, lower our mortality, lessen our morbidity, add to the comfort and happiness of our patients and decrease the cost of illness we have utilized irradiation with avidity and pleasure. We pity the surgeon who has not the sense or the opportunity to avail himself of the great opportunity to benefit and cure many of his patients by utilizing radium treatments, and we more than pity the patient who has to be treated with radium by a radiologist who is a technician and who is not working under the guidance and direction of a surgeon. In our six years of clinical work with radium we have been profoundly impressed with both the marvelously brilliant cures and the possibilities of great evil. The gravest criticisms against radium have not been against the properties of the metal, but indictments against the improper use of radium. Our success with radium has increased month by month and year by year as we have become more familiar with its properties, have studied closely and accurately our own clinical records and the records of other clinics, and have refined our technic of application.

During the first three years that we used radium we operated upon our operable cases of carcinoma of the cervix, the borderline cases, some we operated upon and some we radiated. The inoperable cases, the hopeless cases, we treated all without exception with radium. It was the apparent cures that we got after using radium in some of these bed-ridden, emaciated, cachectic, bleeding, foul-smelling, hopelessly inoperable cases, that convinced us of the great value of radium. We then began to use it in the borderline cases and during the past three years we have considered that the indication for radium in carcinoma of the cervix was carcinoma of the cervix whether in the operable or inoperable stage. Our mortality has been greatly lowered since we have adopted this procedure. We are convinced, too, that we see these cases much earlier than formerly now that these patients have not the same dread of the diagnosis of carcinoma of the cervix with the associated major operation, the long confinement to the hospital and the almost hopeless prognosis. In this Section the profession and the patients have been quick to realize that the treatment of carcinoma of the cervix by irradiation is without primary mortality, that it causes very little suffering when properly done; that they are in the hospital but a few days and that it is only rarely necessary to use a general anesthetic. Up to January 1, 1922, we had treated with radium fifty cases of carcinoma of the cervix and when the five-year period is covered we shall give our tabulated records.

In fibromyoma of the uterus we have had some strikingly favorable results, but we have selected these cases with care and caution. We do not believe that radium should be used when the fibromyoma is larger than a four months' pregnancy, except to control hemorrhage to prepare the patient for operation. The submucous and the pedunculated varieties of fibromyoma do not respond to radiation. When we have uterine hemorrhage due to fibromyoma not of the submucous or pedunculated varieties, and when there is no pelvic inflammation either acute or latent, regardless of the age of the patient, radium with us has been almost a specific in relieving these hemorrhages. We do not use it from preference in the absence of hemorrhage to treat fibroid tumors of the uterus. We think that a radical operation, if there are no contraindications, is the procedure of choice, but when we have used radium to reduce the size of the tumor it has been very effective, although slow and prolonged. One can always prevent permanent amenorrhea or

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abrupt menopause by a very careful and guarded application of radium. If small doses of radium do not control the menorrhagia and metrorraghia in fibromyoma in young women, there is no operative mortality, no morbidity, no confinement to the hospital and operation can be resorted to at any time if required.

Uterine hemorrhages without definite definable causation in young women or women about thirty-five, where the usual hygienic and therapeutic measures have been resorted to without relief of the menorrhagia or metrorrhagia, have, in our Clinic, been cured without exception by radiation. We have classified under this heading about fifty cases that we have so treated. This treatment to us seems so simple and so effective and so free from danger that we do not believe that major surgery in these cases should even be considered. In none of these cases did we have a permanent amenorrhea or a sudden menopausal cycle when it was not desired or unlooked for following the radiation. Thirteen of these cases were under thirty-five years of age and the youngest one was fourteen years. In the young woman, repeated small doses will prevent destruction of the ovaries. However, two applications are usually sufficient to stop the menorrhagia and metrorrhagia. In women over thirty-five who have a family, where the sexual life has been well established and who have not a high strung nervous temperament, one application of radium can be given with the intention of producing a permanent amenorrhea. The proper application of radium in these cases is the only question involved.

Epithelioma of the skin of both the squamous cell and basal cell type, where there has been no involvement of bone and mucous membrane, in a very large series of cases has almost invariably been cured by radiation. Epithelioma of the lip we believe should be treated with but a few exceptions by surgery with radium as an adjunct.

We have cured four cases of urethral caruncle of long standing with radium. Two cases of epithelioma of the penis we have cured with radium.

Sarcoma of the soft parts is often spectacularly cured with radium, but in sarcoma of the bones our results have been almost negative.

We believe that hyperthyroidism is a surgical condition today and that surgery is the treatment of selection, but we have gotten some favorable results from radiation in these cases where operation has been refused.

Radiation for keloids with us has always resulted in cures. Radiation for the various types of angiomata is far more satisfactory than is surgery for these conditions.

Radiation for non-suppurating tuberculous glands is very satisfactory and leaves less scarring of the skin than does surgery.

In conclusion, we believe that radium is used in many pathological conditions where it is positively contraindicated and that in far more cases radium is improperly used. Yet we have in this rare metal or some such metal yet to be discovered with greater penetrating power than radium, or in some apparatus that will produce rays similar to radium emanation, our greatest hope for the cure of cancer.

DISCUSSION

Dr. W. S. Anderson, Memphis, Tenn.—We have had, as Dr. Newell has brought out, quite a bit of antagonism recently against radium. I think it is brought out by men who are not familiar with radium who have used it unsuccessfully. Radium is not an antagonist to surgery, but should be used hand in hand. In many instances radium can be used where surgery would be a decided risk. One type of case in particular which was not brought out but in which to my mind we get really spectacular results is the case of the new-born infant with an enlarged thymus gland. In a case seen recently I was called in consultation late at night. When I reached the bedside of the mother the nurse had the child lying with the head turned down because if it lay face up it gasped for breath and turned blue. When I was called I was told the type of case I was to see, so I carried my radium with me. The gland began to shrink within a few hours and the child breathed more comfortably. In that case the radium was used to quite a definite advantage because the child was so small and the symptoms so alarming that it could not be taken to the x-ray.

Men working with both x-ray and surgery have concluded that carcinoma of the cervix is a type of disease in which we should use radium

and x-ray and abolish the use of surgery. We know what the mortality was formerly, and we know there is no mortality from the use of radium and that the results of this treatment far surpass what we had from surgery. It is wonderful what we can do in cases that come in with foul, stinking, cauliflower masses, with the blood count down to about 2,000,000. The odor will disappear and the blood count go up to normal within a few months' time, with marked improvement in the woman's general condition. All early cases should have radium even though some men resort to operation. In my work I have given up operating and use radium alone.

I heartily agree with Dr. Newell regarding the use of radium in fibroid of the uterus, but it should be limited, as he brought out, to those types where there is no pathological involvement of the appendages or where the growth is not larger than a three or four months' pregnancy. When they are larger than that the case becomes surgical. All types of malignancy of the fundus are surgical. In the fibroids where the patients are markedly emaciated from a large or continuous bleeding, radium can be used to good advantage to get the patient into better condition for subsequent operation.

Dr. Newell (closing).—There are many cases in which we use radium which I have not indicated because I wished to give you only our general conclusions about the type of case we are using it on. I think our Clinic is following pretty closely the other clinics in the country and in Europe, except that some of them are very radical and we have not resorted to such radical measures. In many instances radium is used where it does the patient a great deal of harm.

PREGNANCY WITH AN IMPASSABLE VAGINA: CASE REPORT*

By R. M. Wilson, M.D.,
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Kwangju, Korea.

We have thirty-two American mission hospitals in Korea, the little country now under Japanese rule, and we are trying to enlighten these people as we can. Some of the most horrible things I have seen have been along obstetrical lines.

The Oriental woman after the child is born gets up at once and goes to work. Consequently we see many cases of complete prolapsus, of women coming in with the uterus down between the legs. The Oriental treatment is to take pure nitric acid and apply it to the uterus, cauterizing it and then replacing it, and sometimes complete adhesion follows. Of course occasionally they become pregnant through a small opening, and we have all kinds of deformities resulting from this. Often these women's vaginas are entirely destroyed. In one case of a woman pregnant in this way, she could not come to the hospital, the child died at labor, and finally after she had become much emaciated they brought her to me.

As result of the cautery the vagina had been obliterated by scar tissue, and at labor it was impossible for her to bear the child. It died at labor and then began to decay. Four months later she was brought to our hospital with a very foul smelling condition. I dilated the small opening and removed from the uterus the bones, hair and some remnants of tissue, the balance of the child having passed out before in a purulent form.

The patient was very much emaciated, but after being a week in the hospital returned home. The mystery to me was how she could exist through this long period of decaying process that took place in her body.

Dr. Patterson at Kunsan has done four consecutive cesarean sections on one of these cases of scarred vaginas.

I often do cesarean sections because of this deformity of the vagina, although I have found that I get better results by cutting below and entering the uterus or by vaginal hysterectomy. Many of these cases have been tampered with and are infected and the abdominal route not safe to enter.

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INTESTINAL OBSTRUCTION*

By T. W. Holmes, M. D.,
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Intestinal obstruction, while not necessarily fatal, is always a grave condition. Its gravity is threefold: it is dependent not merely upon the local obstruction to, and arrest of, the fecal current, nor upon the interference with the free circulation

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of the blood in the affected segment of intestine, serious as both these conditions may become, but upon constitutional symptoms, the result of absorption of poisonous products from the upper intestinal tract.

This paper is based upon the findings of some 200 cases of acute intestinal obstruction that were operated upon and that came under the service of several surgeons.

With the exception of intussusception, age played no important role. However, sex did, the condition being found more frequently in the male. Race played a rather important role, the proportion being two colored to one white. Negroes were more subject to intestinal obstruction than whites, possibly because of the fact that pelvic inflammatory diseases with resulting adhesions are much more common in that race.

In going over the different operations performed and the circumstances under which they were done, as they varied from such simple procedures as the untwisting of a volvulus or division of a constricting band to resection of several feet of gangrenous bowel, one finds that the result depended far more upon the condition of the patient at the time of operation, and was in direct ratio to the time of onset rather than to the operation itself. Other things being equal, the cases of resection compared very favorably with the simpler forms of operation.

The shortness of the interval of time elapsing between the onset of symptoms and the operation played a most striking part. Of 38 cases operated upon within the first twelve hours from the beginning of the symptoms, there were 36 recoveries and 2 deaths, a mortality rate of a little over 5 per cent. The mortality rate steadily increased as the interval of time elapsed. Thus the cases operated upon in the second twelve hours advanced to 11 per cent and the ones operated upon in the second twenty-four hours to 31 per cent.

Obstruction may occur at any place along the intestinal tract and may be acute or chronic, complete or incomplete, and due to a number of causes, chief of which are adhesions of inflammatory origin, intussusception, volvulus, foreign bodies, internal strangulations, intestinal parasites, bands, kinks, twists, post-operative or not, paralysis, tumors and congenital defects.

Intestinal obstruction may at times be simulated by other conditions, viz.: typhoid fever, Henoch's purpura, certain infections, appendicitis (particularly of the fulminating type, in which there is a paralysis from toxemia), twisted pedicle of a tumor, lead colic, gallstones, mesenteric thrombosis, diaphragmatic pleurisy, meningitis, etc., which make a diagnosis at times not an easy matter. The consoling fact, however, remains that practically all the conditions with which this is likely to be confused demand operation almost as imperatively as intestinal obstruction, and where the possibility of an acute intestinal obstruction is raised, with the condition growing progressively worse, immediate laparotomy should be done without delay.

The clinical picture of acute intestinal obstruction is fairly constant and characteristic. When all the classical symptoms are present diagnosis is very easy. Unfortunately they are not always present, as in the post-operative variety.

As for the symptoms, pain is the most important one, being of sudden onset and colicky in character at first and becoming more continuous with increasing severity.

Constipation is usually present, but may be preceded by one or more bowel movements, merely emptying the bowel below the obstruction with total obstipation following. This is especially true in cases of high obstruction. The exception to this symptom is intussusception in which the bowel movements are frequent and contain blood and mucus.

Usually more or less shock is present, and if it accompanies the early manifestations of obstruction, one may be certain the segment of intestine involved has been pretty badly used, so that its blood supply has been seriously interfered with and its lumen obstructed. These symptoms may be mild at outset with increasing severity, which means that the obstruction was incomplete or partial at the beginning, but has become complete.

Distention, although a fairly late symptom, is usually a constant one, depending on how high up the obstruction is. The higher it is, the less the distention. It is usually asymmetrical with high obstructions and symmetrical with the lower ones.

Visible peristalsis is rarely observed early and is usually well developed in proportion to the length of time that the obstruction has persisted. The same may be true of borborygmus, which seems to be associated with at least a moderate degree of hypertrophy of the intestinal wall. Auscultation reveals increased peristalsis.

Vomiting is fairly constant and next to pain in frequency. At first it consists of the stomach contents and is followed by bile-stained mucus and fluid from the duodenum and upper intestinal tract, becoming stercoraceous later.

Hiccough is a frequent accompaniment of this latter stage. Tenderness is largely dependent on the character and the location of the obstruction. Tenesmus and movable dullness are only occasional symptoms.

As the condition progresses, the patient who at first may have shown few signs of serious illness begins to develop in addition to his pain and vomiting a certain symptom complex that is very definite, viz.: anxious expression, pallor, cold sweat, sunken eyes, rapid pulse, subnormal temperature, dryness of mouth, severe thirst, scarcity of urine, which frequently contains large amounts of indican and an excessively high leucocyte count. Death usually supervenes in a few days to a week, if operative or other relief is not forthcoming.

Certain varieties of intestinal obstruction are more difficult to diagnose than others, and at the same time more amenable to treatment. This is especially true of foreign bodies such as gall stones or intestinal parasites impacted in the lumen of the bowel.

Intussusception is fairly easy of diagnosis. The passage of bile-free mucus stained with blood and accompanied by marked tenesmus and a sausage shaped tumor in the abdomen in a child previously healthy, points conclusively to a diagnosis of intussusception. One case was reported in a child one month premature upon whom two days after birth operation was performed and followed by complete recovery.

The sudden onset of colicky pains of increasing severity in a middle-aged or old person who has been troubled with constipation, and especially in persons with large pendulous abdomens, accompanied by early and marked distention, suggests strongly volvulus of the sigmoid.

Post-operative intestinal obstruction is one of the calamities of modern surgery. After the patient has undergone the mental and physical strain of a severe operation and is just beginning to feel that he is convalescing and has passed the danger period, to be informed that he must undergo another operation for obstruction, taxes his fortitude almost to the breaking point as well as to the uttermost his powers of physical endurance.

Here as elsewhere, prevention is far better than a cure. I do not make the statement that all cases of post-operative obstruction can be prevented, for they cannot, but their frequency can at least be reduced.

It is a common belief that at least temporarily adhesions take place any time the abdomen is opened. Probably most of them absorb, or in some way disappear in the course of time in those cases where there is prompt and complete healing. Where, however, there is a continued irritation, for instance a low grade inflammation from whatever cause, these adhesions will not disappear, but will be found to have become organized and often dense fibrous bands will result. These are not an infrequent cause of the obstruction's occurring late. The early ones are due to localized peritonitis, the result of infection in the wound tract or not infrequently to foreign bodies such as drains, especially unprotected absorbent gauze stuffed in large quantities into the wound, and they are productive of extensive adhesions along the drainage tract which in turn under favoring conditions may give rise to intestinal obstruction.

Statistics may vary in different clinics, but it is safe to say that approximately one-half the cases of intestinal obstruc-

tion occurring both in hospitals and private practice have their origins in adhesions resulting from previous operations. Why is this? Is it because of the circumstances inseparably connected with any mechanical procedure involving the opening of the abdominal cavity and the handling of the peritoneal and raw surfaces, or is it caused by the very condition which called for the operation, or is it due to faulty technic, giving rise to undue trauma of the tissues, or to infection, or the presence of foreign bodies, as drains left in the tissue, causing continued irritation to the peritoneum, or to some combination of these factors?

So far no satisfactory explanation has been observed. Every one is familiar with the fact that in many cases where one could reasonably expect adhesions to form, few if any do, while in other cases without apparent reason many dense adhesions form and persist. Whatever may be the best reason for this, it is probable that the two most potent factors at work are the presence of a persistent low grade inflammatory process, the result of infection, and the presence of some foreign body in the tissues such as a drain.

The potency of the latter factors is abundantly proven not only experimentally, but by the marked reduction of late years in the relative number of cases of post-operative obstructions, due largely to the better observance of the fundamental principles, e. g.: gentle handling of tissue, surgical cleanliness, discontinuance of the use as drains, of large amounts of unprotected gauze, and repeatedly removing and replacing it, the avoidance of unnecessary drainage of any kind, and the use of strong antiseptic solutions in the abdomen such as tincture of iodin, etc. Five of our cases gave a history of having had their abdomens irrigated with tincture of iodin following operation for peritonitis.

Not much dependence can be placed on artificial aids, such as the application to the peritoneal surfaces of ointments or membranes and the like. Frequent change of position after operation and the early establishment of peristalsis by means of pituitrin promise more than anything used at present.

Paralytic or adynamic ileus is possibly more common than usually believed to be, and more commonly follows operation upon the appendix, pelvic organs, kidney and urinary tract.

At first these cases do not appear very ill. Abdominal pain is not marked, nor is the pulse rate much increased, and there is little evidence of shock. Vomiting usually occurs early accompanied by little nausea. It is at first copious and consists of fluid mixed with mucus, later of the intestinal contents with a fecal odor. Auscultation of the abdomen reveals no gurgling. The passage of the stomach tube in doubtful cases, where mechanical obstruction is feared, may furnish valuable information as to the character of the stomach contents, and followed by repeated lavage may be of great benefit. When intelligently used it may prove the means of avoiding the reopening of the abdomen or it may even become a life-saver.

The etiology of this condition is still in doubt. The picture in the well developed cases is rather that of a true paralysis of the sympathetic nervous system.

Not every case of acute intestinal obstruction should be operated upon regardlessly. The nature of the case, the length of time that elapsed from the onset, and the condition of the patient, which is in direct ratio to the length of time, are all determining factors to be worked out. Of course, every case that comes early should have a laparotomy and the offending obstruction be removed. The late ones are the puzzling ones, and the one essential is to give the patient the very best chance for his life.

We are very much indebted to the Dagstedts, Murphy, Brooks, Whipple and Stone and others for their untiring efforts and works in connection with the toxic agents produced in acute intestinal obstruction. Through them our knowledge has been much broadened in every way, especially with reference to medical and surgical treatment.

The operation of enterostomy as devised by Nelaton is certainly a life saver and has been very little improved upon

with the exception of the introduction of the rubber drainage tube instead of merely opening the bowel.

It is rightly claimed that the cause of the high mortality of about 50 per cent in acute intestinal obstruction is that the operation is performed too late. That is true, but even when performed late, it can be greatly reduced if the principles of a properly performed and properly located enterostomy can be carried out.

Victor Bonney, in 1910, published a paper advising that instead of following out Nelaton's injunction the jejunum be opened for this purpose. He divided the intestine into three segments, the lower, middle and upper. The lower more or less collapsed. The middle contained gas; the upper, fluid. The character of the vomitus indicates the height of the fluid-containing segment. When feculent, the stomach is the highest part. At first in all types of obstruction, whether in the small or large intestines, the vomitus is simply the stomach contents; later in all types the vomitus becomes feculent and the stomach and the jejunum are in the segment of toxicity. "This upward extension of the limits of the fluid-containing segment is due to a rapid upward extending infection of the canal by organisms of the lower intestine. The current in the intestinal tract has become reversed and the drainage must be established in the highest fluid containing segment. The drainage in the jejunum causes an inevitable cessation of the vomiting."

The jejunostomy may be done for advanced cases of intestinal obstruction of any type by using simple technic. A relatively high left rectus for drainage through a large sized catheter is introduced into the jejunum and fastened in position by a double purse string suture. The catheter comes away after a few days and the opening in the bowel and the abdominal wall soon closes.

If in the search for the obstruction the small bowel is found much distended it can always be proved that the coils farthest away from the obstruction are heavy and contain much fluid, that those nearest the obstruction are light and contain mostly gas.

The heavy coils should be opened in several places to evacuate their contents, and it is sometimes very wise to fasten the drainage catheter by an invaginating technic into the highest opening made for relief of the distended gut. The other openings are of course closed.

A few points of clinical value have been materialized by workers in the laboratory on the lethal agent in the condition, as to its formation and clinical nature.

Whipple and others have shown that the formation of a closed loop of the upper intestine, by double section, infolding the cut ends of the isolated segments after thorough washing and re-establishing continuity of the remaining intestine by anastomosis is equivalent to a simple obstruction. An animal upon which such an operation has been performed dies in a manner typical of obstruction and in the loop there accumulates a fluid which on intravenous injection into a second animal leads to similar symptoms. The poisons may be developed in the absence of all foods, bile, pancreatic and gastric juices and in the absence of a secretion peculiar to any portion of the intestine. The ultimate source must be the mucosa and its products or the bacteria.

Consideration of the chemical content of these indicates that the only known toxic agent which might be formed by their lysis from the protein decomposition products and the combined action of bacteria is histamine, which Whipple has isolated. This on injection into another animal produces symptoms identical to acute ileus. The same toxic fluids introduced into the normal intestine, however, are quite innocuous and must be either rejected by the mucosa or destroyed before reaching the systemic circulation.

Closed loops of the duodenum are usually fatal in from one to two days, of the upper jejunum in from two to four days, and of the lower jejunum in three or more days, while loops of the ileum and colon are entirely compatible with life.

The contents of a closed loop at any level are typically poisonous. So that the difference at the levels lies in the absorption of the poison. The duodenum is particularly vulnerable, for a slight distention

at any point suffices to compress the duodenal blood vessels which follow the mesenteric margin against the serosa and lead to a rapid degeneration of the mass of the loop mucosa. The more rapid fatality of the higher obstructions would thus be correlated with the greater secretion of the upper portions of intestine and consequent early distention, anemia and necrosis of the mucosa.

The evidence is thus clear that death in acute ileus results from systemic poisoning by histamine and other putrefactive products formed in the lumen of the obstructed bowel by bacteria and passed through the mucosa when the latter has become asphyxiated and lost its vital powers of selection, subsequent to distention and interference with its normal circulation.

McQuarrie and Whipple have shown that obstruction is attended by depressed functioning of the kidney due to a direct action obstructive poison. This may be ameliorated by treatment with large amounts of fluids as saline, by hypodermoclysis, which is doubly eliminating the poisons. Another method is by gastric lavage, repeated often, possibly with astringent solutions. In intestinal drainage, the drainage tube must be sufficiently stout to resist compression by the abdominal muscles, a point often neglected with fatal results.

Following the injection of sufficient quantities of histamine an animal passes into severe and fatal shock. Dale has shown that a normal cat will resist intravenous injection of more than 10 mg. per kilogram. Etherization for two hours lowers the resistance so that more than half an hour later 1 to 2 mg. of histamine or less proves fatal. Nitrous oxid and oxygen anesthesia does not lower the resistance. Since in acute intestinal obstruction the body is continually receiving histamine and allied substances ether is absolutely to be avoided. The resection should be performed under nitrous oxid or local anesthesia if possible. Otherwise drainage should be established and the more elaborate operation of searching for and correcting the cause of the obstruction deferred until every means of combating the toxemia has been exhausted and the toxemia reduced. The administration of lactose after the establishment of drainage and the avoidance of protein diet may therefore prove valuable in reducing toxemia prior to the actual removal of the obstruction.

CONCLUSIONS

(1) Since the mortality is in direct ratio to the time between the onset of symptoms and operation, early operation is to be urged.

(2) Each late case is a problem unto itself and calls for that greatest accomplishment of all surgeons, surgical judgment.

(3) The anesthetic should be nitrous oxid and oxygen or local anesthesia.

(4) The toxemia should be combated and neutralized by fluids in abundance, hypodermoclysis, gastric lavage, etc.

(5) Administration of carbohydrates and avoidance of proteins is advisable.

DISCUSSION

Dr. E. T. Newsom, Sheffield, Ala.—It has come to be a general axiom that purgatives should be withheld from acute abdominal conditions until an accurate diagnosis has been made. It is just as important in these cases to keep your hand off the hypodermic and not give the patient any narcotic, even after the diagnosis is made, but take him to the hospital for immediate radical treatment. Narcotics administered in such conditions serve to give a false sense of security to the patient, and by allaying the fears of members of his immediate family, co-operation from them towards doing the right thing promptly is delayed. Thus during the narcotized period the golden hours so valuable for doing something life-saving slip away.

Dr. J. Wesley Long, Greensboro, N. C.—Dr. Holmes reiterated the necessity of early operation. The man who hesitates loses his patient. I know of no class of cases that demands more ability on the part of the surgeon to make up his mind and dare to do what he thinks should be done, than those of acute intestinal obstruction.

Dr. W. B. Burns, Memphis, Tenn.—I am reminded of a case seen recently. A boy said he was sitting on a munition wagon somewhere in France when a shell hit near by and did not hit

him, but knocked him off his wagon. He was operated upon shortly afterward at the front for a gangrenous appendix. Not long after that a cholecystectomy was performed upon him at Brest, and still later a gastro-enterostomy in Birmingham, Ala. I saw him this summer with an acute obstruction. I do not know how many attacks he has had. It was an obstruction that would disappear after a time, being due to constriction at the head of the cecum, at the hepatic flexure and possibly elsewhere. I did not use a hypodermic. He had been operated upon so many times that I think even our learned Chairman would hesitate to rush him to the hospital and operate. Post-operative cases of obstruction require considerable thought and the skill of wide experience on the part of the surgeon before he opens again.

Dr. Robert L. Sanders, Memphis, Tenn.—Within the past six or seven months we have had four unusual types of obstruction which it may not be amiss to mention here. Two of them I had never seen before and was not able to find much upon in the literature. One case was a little girl of ten with a seventy-two-hour obstruction caused by a large hair ball just proximal to the ileo-cecal valve. We thought it was impossible for such a large ball to escape through the pylorus and get down as far as that without producing obstruction earlier. When the ball was removed, it looked just like a musk rat. The girl was *in extremis* when she came into the hospital and was operated on as an emergency. She died in about eight hours following the operation.

The second case was an ileal intussusception. This type of intussusception is fairly common in children, but our case occurred in a man 45 years old. He had a lymphosarcoma of the ileum about eighteen inches proximal to the junction and about thirty inches of the intestine was involved in the intussusception. It is unusual to see this ileal type i. an adult, making resection necessary.

The third case was a hernia. An odd feature of the case was that the physician at home had reduced the strangulation, but the man was still sick. He was vomiting, his temperature was still going up, and he could not account for it. We thought it was wise to do an exploratory laparotomy and this showed that the hernia had been reduced, but the internal peritoneal band was still holding at the internal ring, making the obstruction complete. The operation relieved him promptly.

The fourth case was a strangulated femoral hernia which made abdominal section necessary. The discolored intestine was reduced first because resection could not be done safely through the femoral opening.

EYE, EAR, NOSE AND THROAT

TUBERCULOSIS OF THE LARYNX*

By H. H. Briggs, M.A., M.D.,
Asheville, N. C.

It is generally conceded that tuberculosis of the larynx, except in rare instances, is secondary to pulmonary tuberculosis. The writer has never observed a case of the former unassociated with the latter. We shall not attempt to discuss the academic question of the modes of infection, whether endogenous or exogenous, leaving this to better qualified investigators, but shall give our attention first to the incidence and relative frequency of the disease. Reliable data as to the frequency of laryngeal tuberculosis is found in the report of the Iowa State Sanatorium for Tuberculosis for the year ending July 1, 1919 (John B. Gregg, *Ann. Otol., Rhin. and Laryn.*, December, 1921). Of 2347 cases of pulmonary tuberculosis observed over a period of one year, 596, or 25 per cent, showed laryngeal involvement. Of this total number of pulmonary cases a group of 1725 were specially studied, which showed 474 cases, or 27 per cent, of laryngeal involvement. Of these, the 322 incipient cases showed 10 per cent laryngeal involvement, the 722 cases of moderately advanced pulmonary tuberculosis showed 21 per cent laryngeal involvement, and 693 cases of advanced pulmonary tuberculosis showed 42 per cent laryngeal involvement.

Of the 122 cases of laryngeal tuberculosis, the pulmonary involvement was incipient in 3, moderately advanced in 31, and far advanced in 88 cases. In the moderately advanced cases the larynx process was arrested in 16 per cent, improved in 48 per cent, and unimproved in 33 per cent. It is also of note that among these moderately advanced cases the larynx improved while the lungs remained unimproved in 22 per cent, and the larynx remained unimproved while the lungs improved in 13 per cent of the cases. In the advanced cases the larynx was arrested in 18 per cent, improved in 17 per cent and unimproved in 64 per cent of the cases. The larynx improved while the lungs remained unimproved in 6 per cent, and the larynx remained unimproved while the lungs improved in 2 per cent.

Among another group of 610 pulmonary cases specially studied were 122, or 20 per cent, with laryngeal tuberculosis, males and females being affected in about equal ratio. Of the 122 cases of laryngeal involvement, 9 per cent were between 10 and 20 years of age, 38 per cent between 21 and 30 years, 33 per cent between 31 and 40 years, 15 per cent between 41 and 50 years, and 5 per cent between 51 and 60 years of age.

The percentage of cases showing unimproved larynges was highest between the ages of 40 and 50, namely, 72 per cent. All the other decades together showed 55 per cent. Improvement in the laryngeal condition of the incipient tuberculous cases was twice as high (64 per cent) as in the cases of moderate involvement and those of the latter twice as high as in the cases of advanced tuberculosis. These figures indicate that the prognosis of the laryngeal condition varied directly with the pulmonary involvement.

The mortality shown in the first year of incipient pulmonary tuberculosis is three times (25 per cent) as great as that found in the same type without laryngeal involvement (8 per cent). In moderately advanced cases with laryngeal involvement it was twice as great (17 per cent) as in the same class without laryngeal involvement (10 per cent). In the far advanced cases it was in the ratio of 45 to 33, respectively. From this one might infer that the laryngeal condition varied with the general condition.

In cases of unimpaired digestion there were 47 per cent of unimproved laryngeal conditions against 73 per cent with impaired digestion.

*Chairman's Address, Section on Eye, Ear, Nose and Throat, Southern Medical Association, Sixteenth Annual Meeting, Chattanooga, Tenn., Nov. 13-16, 1922.

Intestinal tuberculosis complicating laryngo-pulmonary tuberculosis showed 74 per cent mortality and unimprovement in the laryngeal condition in 84 per cent during one year's observation.

Involvement of the epiglottis or extensive involvement of the larynx indicated a poor prognosis both as regards life and improving the laryngeal condition.

Eighty-seven per cent of the cases of laryngeal tuberculosis showed tubercle bacilli and hemoptysis occurred in 36 per cent, the patient often dating this laryngeal trouble to the time of the hemorrhage.

Of 379 deaths from pulmonary tuberculosis in the institution during five years, 43 per cent showed laryngeal lesions.

Fetterolf reported 83 per cent of laryngeal tuberculosis in 100 autopsies on pulmonary cases.

Pregnancy is one of the most dangerous complications of pulmonary tuberculosis and adds enormously to the patient's chances of death.

SYMPTOMS

It is unfortunate, indeed, that there are no distinctly pathognomonic symptoms in the incipient stages of tuberculosis of the larynx. They do not at first differ materially from that of a simple chronic laryngitis. Slight tickling in the throat, occasionally that of dryness accompanied by a huskiness, is the usual course. These symptoms may subside never to return again if the patient's general condition improves, but there are usually exacerbations with slight improvement and again recurrences when the huskiness develops into a decided hoarseness, soon becoming an aphonia, especially if the lesion is in the cords or in the posterior commissure. Occasionally there is a history of the patient's having lost his voice for a few weeks at a time at intervals of several months only to regain it. This condition may be due to a paresis of the recurrent laryngeal nerve caused by pressure of the tuberculous bronchial glands, the larynx itself being not involved. Increased expectoration due to hypersecretion in the larynx is often noticed.

Dysphagia.—Dysphagia is a most constant symptom in the advanced cases, but may or may not occur in the early stages, depending somewhat upon the location of the lesion and considerably upon the nervous temperament of the patient, the larynges of some patients being far more sensitive than those of others. It is a symptom in at least half of the cases involved. The early infiltration and necrosis of the tip of the epiglottis causes great pain, far more than results after a considerable portion of the epiglottis has necrosed away. Involvement of the cords, ventricular bands and posterior commissure is as a rule accompanied by a lesser degree of pain. In the early stages, however, Doretsky has found dysphagia in only 2.3 per cent, dysphonia in 1.5 per cent, and aphonia in 3.5 per cent. Consequently, these symptoms should not be depended upon in early involvement.

Stridor is manifest at the onset of stenosis, which may be caused by edema, granulomata or tuberculomata.

EXAMINATION OF MOUTH, NOSE, AND PHARYNX

Before attempting an examination of the larynx, it is well to examine carefully the teeth, gums, fauces and tonsils, noting whether the tonsil crypts are diseased and filled with cheesy debris; whether the pillars are adherent and obstruct the crypts; whether there is foreign material in the supra-tonsillar space or behind the anterior pillars, and the amount of lymphoid tissue in the pharynx and naso-pharynx. A post-rhinoscopic view may reveal the remains of adenoids and retained secretion in the epipharynx. Examine each nostril for secretion, for spurs, deviations of the septum, or other obstructions. Transilluminate the sinuses and determine whether they are furnishing infectious secretion which may irritate the larynx and predispose to its infection. Determine whether each nostril is patent and whether the patient is a nose or mouth breather. It is very essential that cases of laryngeal tuberculosis have normal breathing space through the nose and that the function of the nose to warm, moisten and filter the air be unimpaired.

EXAMINATION OF LARYNX

Examination of the larynx should be so arranged as to cause the least possible discomfort both to patient and examiner and if possible should be made in the patient's usual environment. Only in early involvement and if the patient's general condition is good should he be subjected to the fatigue of an examination at the doctor's office. The sanatorium should be provided with a dark throat room where all patients who are able may be taken comfortably for a thorough laryngological examination at regular intervals, but the really sick patient should be examined in his own bed with the least possible fatigue and excitement. The room should be darkened and a brilliant light placed in a steady position back of the patient for reflection into the larynx. A towel for holding the tongue, a tongue depressor, laryngeal mirrors and hot water for emersing the latter should be at hand. It is quite necessary to get the patient's confidence; that he be told that you will not hurt him, and that he can materially aid in the examination by his cooperation. Instruct him how to relax not only the tongue and throat, but also the entire body, and how to breathe through the mouth during the examination. Tell him to sing A in a low tone and to follow your phonation of the same vowel through different pitches. Let him attempt it even though he may be aphonic. Teach him all this before attempting laryngoscopy, and if you succeed you will usually be repaid by a splendid view of the entire larynx. Occasionally slight local anesthesia of the pharynx becomes necessary to a thorough examination. Note first the epiglottis, then the arytenoids. Look carefully into the posterior commissure and at the posterior ends of the cords where the early lesions usually begin. Compare the color and tension of the cords and of the ventricular bands. Note any asymmetry of the two sides which might indicate a beginning infiltration; any lagging of arytenoid or cord during the act of phonation, and whether one cord tends to overlap the other. Note any nodules and whether any injection of either cord ensues during the examination.

DIAGNOSIS

(At this point the pathology was illustrated with lantern slides and discussed verbally by the author.)

PROGNOSIS

The most reliable data for the prognosis of laryngeal tuberculosis were found in the report of the Kings College Hospital, Midhurst, England, covering the four years between June 30, 1911, and June 30, 1915, the after histories being followed for three years after the patient left the sanatorium, which made seven years in all. The total number of laryngopulmonary tuberculosis cases was 883. The system of grouping was that known as the Turban Gerhardt method used in England.

TABLE 1. PULMONARY TUBERCULOSIS WITHOUT LARYNGEAL INVOLVEMENT.

	Males				Females				Both Sexes			
Group	A	B	C	D	A	B	C	D	A	B	C	D
1	109	19	1	17.4	71	9	2	12.7	180	28	3	15.6
2	236	95	5	40.3	109	36	1	33.0	345	131	6	38.0
3	85	61		71.8	77	53		68.8	162	114		70.4
Total	430	175	6	40.7	257	98	3	38.1	687	273	9	39.7

Note: A—No. cases. B—Dead from tuberculosis. C—Dead from other causes. D—Per cent of deaths from tuberculosis.

TABLE 2. PULMONARY TUBERCULOSIS WITH LARYNGEAL INVOLVEMENT.

	Males			Females			Both Sexes		
Group	E	F	G	E	F	G	E	F	G
1	11	5	45.5	3	1	33.3	14	6	42.9
2	53	38	71.7	37	19	51.4	90	57	63.3
3	54	43	79.6	38	29	76.3	92	72	78.3
Total	118	86	72.9	79	49	62.8	196	135	68.9

Note: E—No. cases. F—Dead from tuberculosis. G—Per cent of deaths from tuberculosis.

Group 1: Slight cases; disease limited to a small area of one or both apexes. Group 2: More extensive than Group 1, the whole of one lobe, or severe disease extending to half of one lobe. Group 3: More severe than Group 2, including the cavity cases. From this data Sir Sinclair Thompson (the *Lancet*, October 18, 1919, page 87) made the following observations. Table 1: The mortality was greater the higher the group. In Group 3, 70 per cent were dead in 7 years. In the three groups combined, males and females, 39.7 per cent died in 7 years. In comparing the non-laryngeal, Table 1 cases, with the laryngeal Table 2 cases, including both sexes in each, the mortality in Group 1 was 15.6 per cent against 42.9 per cent; in Group 2, 38 per cent against 63.3 per cent; in Group 3, 70.4 per cent against 78.3 per cent; and a total of 37 per cent against 68.9 per cent. Quoting Sir Sinclair Thompson:

"In other words, among all cases of pulmonary tuberculosis 60 per cent of them may be alive in 3 to 7 years, while only 30 per cent of those complicated with laryngeal tuberculosis may be alive at the end of the same period."

Every case of laryngeal involvement, in fact, every case of suspected pulmonary tuberculosis, should have a serological examination as an aid in excluding lues. The possibility of cancer, papilloma, laryngitis sicca, pachyderma laryngis and other conditions should be borne in mind. There is one condition which, twenty years ago, I attempted to call attention to and designated as a pretuberculous laryngitis, which others since have more accurately termed a hyperplasia, involving the interarytenoid space, and false and true cords, which is often the first pathologic change noted and frequently without any associated subjective symptom. It must be remembered that such hyperplasia may result from a nasal stenosis, chronic pharyngitis, accessory sinus disease, bronchitis, syphilis, lung abscess, asthma, etc., and that it simulates very closely that of laryngo-pulmonary tuberculosis.

The prognosis depends upon:

(1) Environment. A very small percentage of cases of laryngo-pulmonary tuberculosis receives the necessary nourishment, air, sunshine, housing, clothing, hygienic instruction, rest, etc., which are necessary to a cure; consequently the high death rate and the popular and professional false impression of an inevitable fatal termination.

(2) General condition of the patient and his resistance. A long family history of fatal cases indicating a probable low familial type of resistance is always discouraging.

(3) The laryngeal lesion, its location and especially its character, being most unfavorable in the acute and less in the subacute and chronic stages.

(4) Treatment. Freudenthal has repeatedly reminded us that laryngeal tuberculosis is curable in any stage. Especially do such means as enjoined silence, heliotherapy and, in selected cases, electro-cautery tremendously favor the prognosis.

(5) The question of prognosis and treatment of laryngo-pulmonary tuberculosis is social as well as therapeutic, and we, as laryngologists, can do more to lower the mortality rate by our contribution to an educational campaign, eliciting the assistance of the community, state and Nation in proper legislation and appropriation than we can with all the therapeutic measures known to the science of laryngology.

Internist.—The patient should have the attention of an internist who may find an obscure concomitant trouble less manifest than the laryngitis or the pulmonary lesion, yet nevertheless as important and possibly more urgent, which may augment the ravages of the disease in question and handicap the recovery. The tuberculosis specialist in private practice or in charge of a sanatorium may not have the time or possibly the technical training for investigating and treating such conditions, yet his conscience will tell him that the poor victim is entitled to all the benefits which modern medical science offers. The modern patient is becoming educated to the point of demanding a thorough examination, thanks to the efficiency of the educational campaigns conducted by some of our state boards of health.

TREATMENT

A well selected regime is just as essential for a case of laryngeal tuberculosis as it is for pulmonary tuberculosis. I cannot lay too much stress on this point, for I have often seen a sad ending of a case of laryngo-pulmonary tuberculosis where, on account of the mild involvement of the lungs, it was not thought necessary for the patient to take the cure strictly. He was allowed to roam around and use his voice *ad libitum*, only to find his mistake too late. So, I wish to urge that the four cardinal essentials in the proper regime in pulmonary tuberculosis, namely, rest, including regulated exercise, nourishment, air and sunshine, are indicated in laryngeal tuberculosis even if the pulmonary signs of infection are seemingly wanting and become doubly imperative if the laryngeal lesion is paramount. To this end it is necessary that he be placed in pleasant surroundings, free, so far as possible, from care and worry, and that he be encouraged to develop a fighting spirit and morale without which few patients ever get well of tuberculosis in any form, stage or clime.

Just here I would like to say a word against routine. Routine to a certain extent is necessary for the management and treatment of tuberculosis, but a too close adherence to a routine that the busy institutions and busy practitioners are almost forced to adopt will result in failure in a certain percentage of possible cures. Last week, in St. Paul, I heard a most interesting discourse on the rational treatment of syphilis, by Dr. Wile, of the University of Michigan. The keynote was individualizing the patient as against the routine treatment. He pointed out the great success which the campaign against syphilis is accomplishing through a necessarily more or less routine treatment, yet regretted the necessary number of failures on account of routine. It is essential to individualize the tuberculous patient, especially with reference to his tastes and temperament, for such patients are more diversified and represent the various strata socially, intellectually and physically more than do the luetics, and in order to establish the proper morale and fighting spirit each case must be individually studied just as a case of mastoiditis, a nephritis or a hyperthyroidism must be studied and treated individually.

Silence.—Rest is recognized in both medicine and surgery as being an essential condition to recovery, and we have observed its efficiency in pneumothorax in immobilizing the lungs. It is equally essential to immobilize an inflamed larynx, but unfortunately it cannot be so effectively done since the larynx is involved either actively or passively in the physiological acts of breathing, coughing, sneezing, swallowing and most of all in phonation. This latter source of motion and disturbance fortunately can be eliminated through silence, and by silence I mean absolute silence indefinitely until cure is effected. If I were asked the relative value of the various measures to relieve and cure laryngeal tuberculosis, I would put silence first, the general regime above mentioned second, surgery (in selected cases) third, heliotherapy fourth, local applications fifth, and internal medication, including tuberculin, sixth.

Pain and Dysphagia.—Pain and dysphagia are the symptoms most to be dreaded, and, unrelieved, mark the beginning of the end. Radical means are therefore justifiable when they appear. Orthoform and anesthesin are somewhat palliative if insufflated on to the lesion by the doctor or by the patient in case he has been properly taught, but in the hands of the average patient they are practically valueless. Cocain or procain are allowable and indicated in small percentages, increased at intervals if necessary, in any case where the dysphagia resisting other treatment prevents the taking of proper nourishment. In order to induce the greatest anesthesia, powders should be insufflated one-half hour and solutions used ten minutes before meals. The use of the electro-cautery is of far greater value in dysphagia than are topical applications. The greatest pain is due to erosion of the mucous membranes containing the sensitive nerve endings. Well placed ignipuncture not only alleviates the pain, but in some way checks the infiltration and

erosive processes and induces resolution, probably by sclerosis.

Of greatest value to the patient and physician is the fact that the superior laryngeal nerves which supply the upper part of the larynx pass upward very superficially over each side of the larynx before penetrating the cryco-hyoid membrane and with a working knowledge of the topography of the parts the nerve may with ease be located, injected or resected, bringing immediate relief from the dysphagia. A gain of 10 pounds in weight in one week after an alcoholic injection of these nerves has been observed.

Stenosis.—Beginning stenosis of the larynx evidenced by stridor is a sequela of laryngeal tuberculosis which demands immediate surgical interference. The stridor is greatest on inspiration in contradistinction to tracheal or bronchial stenosis where it is usually greatest on expiration, and the patient is wont to assume the sitting posture with head drawn slightly backward in laryngeal stenosis. With stenosis farther down he assumes the position of the chest and body bent forward and chin downward. The stenosis may be due to exuberant granulation or cicatricial bands, or it may be due to tuberculoma. The laryngoscopic examination quickly determines whether the stridor is due to obstruction or to bilateral abductor paralysis from pressure on the recurring laryngeal within the chest or from bulbar lesions which may occur in locomotor ataxia. Occasionally a stenosis can be relieved by gradual dilatation of the larynx, but usually tracheotomy must be resorted to.

Aside from the treatment of the symptoms above given there are indicated measures for cleansing the larynx and removing the acrid secretions. An alkaline gargle will do this far better than will a spray from an atomizer which, in the patient's hands, seldom reaches the parts affected.

While I seldom prescribe iodoform to be used in a powder blower by the patient, I do think that in certain cases where the patient can be taught its proper use and in cases whose digestion and olfactories can withstand the onslaught, it may have a limited efficiency. Dr. C. L. Minor, of Asheville, is very strong in its praises. Chaulmoogra oil in intra-tracheal insufflation is mentioned favorably by a few. I have not used it.

Cantharides blisters on the sides of the larynx over the superior laryngeal nerves are sometimes moderately efficacious in relieving dysphagia.

Continued daily local applications varying in strength to the affected parts are frequently administered in certain stages of the disease with benefit providing the operator is very careful that the tip of the applicator is well covered with cotton and no undue force is used that might in the slightest degree abrade the mucous surface. I feel quite sure that damage is often done to the larynx and the tuberculous process is extended by the injudicious and meddlesome use of topical applications. The strength of the solution should depend mainly upon the stage of the disease, increasing as the chronicity advances. There is contraindication for applications in the acute or per-acute stages of laryngeal tuberculosis. On the other hand, a chronic ulcer may tolerate with benefit a strong solution. Of greater value than topical applications I have found intra-laryngeal injections of a bland oil containing from 0.5-2.0 per cent of menthol and twice this percentage of eucalyptol and guiacol, but care must be taken that the syringe tip in delivering the solution does no harm. The patient's tongue should be held forward and he should be instructed to take a deep forcible inhalation when the syringe propels the solution deeply into the larynx. The tip of the syringe should be pointing directly downward and just beyond the upper margin of the epiglottis, which it should not touch.

Surgery. — Of perhaps the greatest value is the surgical treatment with the electro-cautery in properly selected cases. In some instances the epiglottis may first be removed by cutting forceps and afterwards cauterized. Increasing infiltrations are immediately benefited by ignipuncture carefully placed at two or three points at intervals. By the use of the cautery deep ulcerations throw off effete tissue and a new resistance is induced.

I shall feel very grateful indeed if I have been successful in convincing my hearers: (1) of the vast prevalence of laryngeal tuberculosis complicating pulmonary tuberculosis; (2) of the increase in mortality which this complication adds; (3) that this complication adds to an otherwise painless disease, pain and discomfort which is equaled in but few other diseases; (4) that there is a rational treatment for each stage of laryngeal tuberculosis, that a cure in any stage may be possible, and that there are effective measures for the relief of pain; (5) that an especially skilled laryngologist should be in attendance in every tuberculous sanatorium and that the pulmonary tuberculous specialist should either have associated with him such a laryngologist or perfect himself sufficiently both medically and surgically in the technic of laryngology to enable him to give these poor victims the aid which the science of laryngology offers.

DISCUSSION

Dr. Charles L. Minor, Asheville, N. C.—This subject is too big to discuss thoroughly, and I shall dwell upon only a few points.

The throat men get their cases much later than the lung specialist does. They do not often have a chance to see an extremely incipient case. If a lung man like myself is familiar with the laryngoscope and examines every patient in whom he finds pulmonary trouble, he will see many extremely incipient cases.

If you wish real results, diagnosis must be made of the early changes. If you do not see the cases until later I think you are justified in your pessimism regarding laryngeal tuberculosis.

Treatment varies greatly if a case is incipient or advanced, if it is an infiltration or an ulcerated case, and according to the different types of pathologic lesions which exist. But unquestionably in all cases cleanliness is highly desirable. You know well how dirty an advanced larynx case is from being bathed with the secretions. I believe therefore that the proper use of simple alkaline washes in all cases, of an astringent solution in congested cases and of a mentholated spray is valuable.

To make a hard and fast rule that silence applies in every case of laryngeal tuberculosis is a mistake. A case where there is involvement of the cords or the posterior commissure absolutely demands silence. It is extremely important. Where it involves the epiglottis we have not found silence necessary. Certainly the mental effect upon the patient of absolute silence, except in so far as it cultivates his will power, is bad. But unquestionably a large number of these cases under silence and cleanliness alone will do well.

Local applications vary with the case. I am satisfied that the local application of iodoform is of great value in beginning infiltration. Iodoform in the presence of living cells gives off nascent iodin. The patient has iodoform insufflated into the larynx before breakfast and at bedtime. Some cannot take it, but a large majority can take it easily. It is perfectly marvelous in those cases how the infiltration will disappear under its systematic use. I have seen large infiltrations gradually absorbed. If I have ulceration I do not use it. In such cases I like lactic acid and glycerin. My personal experience for a number of years has convinced me that small, not too active ulcerations do well with careful, not violent, strictly localized applications of lactic acid and glycerin, or formaldehyde and glycerin.

As far as dysphagia is concerned, alcohol injections, when they work, are valuable, but they do not work sufficiently often to give satisfaction. I heard from Dr. McBrayer the other day that he had been experimenting with the effects of the x-ray in dysphagia. He had a case of enlarged glands of the throat which he subjected to the x-ray and it relieved the dysphagia. He has tried it in other cases since and found it useful. I have had no experience at all with it, but I think it ought to be mentioned here and tried out.

It is a pity to let the public have such a terrible idea of the hopelessness of laryngeal tuberculosis. We get good results if the cases are found reasonably early, and if the patients give proper cooperation. My patients, of course, are under proper hygienic conditions, but in other places this cannot be so well managed. You have not the opportunity to govern your patients that I have, but I believe we can face an ordinary case of laryngeal tuberculosis, not too advanced, with a good deal of hope, and we sometimes see very bad cases in which either through surgery (which I do not favor as I used to) or by other means can also be brought to a standstill. The final need is to find them early and then give a rational and not too interfering treatment.

GROUP MEDICINE

GROUP MEDICINE: A PROCESS OF EVOLUTION*

By R. B. McBride, M.D.,
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Medicine, an art, is fast becoming a science. Indefatigable workers have devoted themselves to special tasks and thereby truths have been established that may be employed by any learned physician without fear of contradiction. Definite values are given to signs, symptoms and tests that bespeak specific therapy for the sick individual instead of empirical methods that may be a thousand years old. This means relief for the patient and satisfaction for the physician. Such rapid strides have been made that there is no disease today which physician and laity do not look forward to controlling, and even of finding specific therapy for. Preventive or prophylactic medicine, unheard of a few decades ago, is now prominently taught in our medical schools, practiced by every honest physician and sought more and more by the laity as the months go by.

This status of medicine is of recent years and has been brought about by specialization. Men have trained under men who have devoted themselves to some one phase of medicine and they themselves have spent their lives at the same tasks, working out truths and facts, or laying the foundation for those who took up their work. These men are called specialists, and as one particular branch of medicine unfolded its problems and possibilities, workers would narrow their domain until, today, the special fields of medicine are very numerous. This is one phase of what we refer to as the evolution of medicine. The general practitioner of yesterday, from whom the specialist of today developed, had his beginning in men who, though without means of training, were willing to work with meager facilities to alleviate as much as possible human suffering and ills. Thus from folklore, medicine developed into modern science.

That specialization has been the cause of the great advance in medicine, and that it has come to stay all will admit. Barker, May, 1921, wrote:

> "On the whole, the advances made in clinical science by means of specialization have been astounding. That there will be cessation of this tendency to specialization seems unlikely. On the contrary, the differentiation of workers will in the future in my opinion be even greater, for men have found that mastery comes through limitation of field and concentration of interest and effort. Coincident, however, with this increasing division of labor, provision must be made for the synthesis of results of the special workers into harmonious wholes."

This last thought, to my mind, bespeaks the next, and to date the last link in the evolution of medicine, group medicine, or group practice.

Whether we admit it or not, practically all of us are today practicing group medicine. The general practitioner sends his patients to the different specialists for special information in their field of work; to the laboratory for serological and bacteriological examinations; to the x-ray man, to the eye, ear, nose and throat specialist, to the cystoscopist, etc. The surgeon needs the help of the internist and of the laboratories, and vice versa. The specialist in every line needs the help of those about him skilled in other branches of medicine, for no organ of the body gets sick by itself. I recall that recently a very prominent specialist in diseases of the eye told me that he needed the services of the internist in 90 per cent of the cases coming to him, adding that when the internist was not available he had to be internist and eye man, too, and he had never practiced or studied general medicine after his college days. It is too often true that the specialist consulted finds and treats a minor affection in his field, when the patient is suffering from some far more important disease, which may be overlooked altogether by him. A well known surgeon told me recently that as he

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examined his patients more carefully, or had them examined by an internist associated with him, that he was really surprised by the number of patients that were being relieved by removal of focal infection, rest, proper diet, etc., who heretofore had been operated upon. It is not altogether the fault of the specialist that such a condition exists. An x-ray man treats with radium or x-ray a bleeding fibroid, getting relief for a patient, who recommends a friend with an apparently similar condition. The friend may have a fibroid and also virulent pus tubes that are not readily apparent, in which case x-ray or radium might be disastrous. Many such examples could be given where the specialist fails to obtain proper cooperation from those about him, possibly for fear the patient may lose confidence in him, or resent the extra time, inconvenience and money that it takes to obtain an examination and consultation of the many specialists that may be needed in the case.

That physicians and the public fully realize the need of cooperation and consultation by several competent specialists when there is a difficult medical situation in hand is demonstrated by the facts that:

(1) Independent physicians recognize the necessity of cooperating with those about them.

(2) Large industrial plants and the armies of the world specialize and coordinate their medical men.

(3) Hospitals and medical schools have for some time developed specialization and cooperation among their staff.

This latter probably was the first evidence of group medicine, and for the poor who receive the benefits of clinics thus arranged, medicine has become complete and ideal. The public, however, that is not served by industrial medicine and free clinics, has learned that it is not receiving the best there is, and in lieu of a proper place to go is taking itself first to one specialist and then to another who may be recommended by a friend.

Often they find themselves in the hands of a specialist who does not see beyond his special field. Weeks and months, and per chance health, may be lost before the patient finds himself under the care of a physician who can give the best service for his particular disease. If one doubts that such happens we would ask him to recall the number of cases of pyelitis that have been operated upon for appendicitis, the number of upper abdominal operations that have been performed where the pains and distress were cardiac in origin. I have known of two abdomens being opened recently by good surgeons for conditions that later proved to be gastric crises of tabes dorsalis. I know of a man who was treated for tuberculosis for a year and had a supposedly tuberculous testicle removed, who today is robust and doing strenuous work after it was determined that he was luetic and proper treatment instituted. No matter how closely we examine and cooperate with those about us, mistakes will be made, but they will be considerably less numerous if we use all the talent to be had in an organized and competent group, whether it be private or institutional. If a specialist does determine that another physician should see his patient, often the patient resents being passed around and paying separate fees. He dislikes also the inconvenience of going from building to building if that be necessary, and the time consumed. This situation is conducive to the development of cults and charlatans. To illustrate the public's point of view, I quote from an abstract of one of our large and substantial daily papers:

> "The public does not know how to get sick as a specialty. Instead, the public just gets sick. If it could acquire that art, a sick man might know whether to consult an x-ray man, a rhinologist, a dermatologist, oculist, aurist or one of three or four different kinds of dentists. The general practitioner is rapidly going out of date as a species. When a man gets sick now he has to employ somebody to tell him whom to employ in order to find what specialist to consult for what ails him. Perhaps he is better off than in the old days when he sat for a few minutes in the dingy office up over a drug store and smelled whiffs of formaldehyde, ether and castor oil until a bearded old gentleman came out and prescribed a poultice and tincture of iodin to be painted somewhere or other on the skin. But the new way is more bewildering—and immeasurably more expensive.
>
> "If a car owner had to do as a sick man has to do now he'd never get his car repaired."

Numerous editorials such as the above appearing from time to time in our large

daily papers bear witness to the fact that the public realizes there is lack of coordination of the many specialties of medicine.

Group medicine, or group practice, to my mind, is the solution of the problem from the standpoint of both patient and physician. When it is known that there is a group of competent and conscientious specialists housed under one roof, patients will quickly realize that all they need to do is to apply to such an institution, and if they themselves do not know the kind of specialist they need they will shortly be placed in proper hands. If it is necessary to be seen by several physicians, there will be a great saving in time for both the patient and the doctor. It need not be said that individual contact with the doctor desired is lost to the patient when visiting these clinics, for the one consulted can ascertain the field involved and refer the patient to the proper specialists, keeping in close touch with him all the way and entering into the consultation when all information concerning the patient is assembled. Too much has been said about individual service and individual contact of the doctor with his patient. It is well and good if it happens to be the kind of specialist that the particular patient needs. If he is not, both patient and doctor had best sacrifice their feelings and desires to have the case carefully and skillfully handled. The time has passed when men can cover the whole field of medicine and it is passing when patients will allow the physician to diagnose and treat without the employment of all modern methods of investigation at hand.

In a well organized clinic complete records can be kept, so that at any time any physician in contact with the case may not be in doubt or find it necessary to repeat tests that have been made. Also facilities that would be next to impossible for one or two men to own may be at hand for the use of the group. Consultations can be easily arranged, and not least, from the standpoint of the patient, there will be one fee which shall cover a proper charge at the hands of each specialist. Necessary accessory examinations such as laboratory work, x-ray work, etc., should be charged for at a rate only slightly in excess of the actual expense. It is not proper, and the public will not stand always for large fees at the hands of men for these services. They should have the use of them, for they are entitled to every means at our command for thorough diagnosis and treatment. It is very unjust to deny a patient any examination or test that will assist in the diagnosis and treatment of his case, and as unfair to charge him a large fee for each and every service, as to charge him an extra fee for the use of a stethoscope, blood pressure determination, or the taking of temperature. To withhold from our patients all the facilities for diagnosis and treatment that have been developed in the medical profession means inefficient methods of practice. To persist in inefficient methods of medical practice is to discount much of the importance of the great advances in the medical sciences already accomplished as well as those to come. To deny the public the full benefit of these advances is to invite degrading and destructive legislation which may ruin the profession here as it has ruined it in Germany and is now ruining it in England.

Discussion follows paper of Dr. Vaughan, page 728.

GROUP MEDICINE: A CRITICAL SURVEY*

By Warren T. Vaughan, M.D.,
Richmond, Va.

Group medicine in its present form has been evolved chiefly by those specialists in the various branches of medicine who have recognized their own limitations and the consequent possibility of error in diagnosis and treatment, and by men who have been dissatisfied with the existing procedures of individual consultation. But many of the combines of physicians today masquerading under the title of group practice are not true groups. Several independent physicians often have offices

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together so that each may readily consult with the others concerning his own private patients. They are not practicing group medicine. Arrangements for sending patients from one specialist to another for various examinations, while entirely laudable if not commercialized, does not constitute group medicine.

THE ELEMENTS OF A GROUP

The group is an integral institution in which each member bears his share of the responsibility in both diagnosis and treatment. In the true group, the patient is equally under the care of all the members in whose special field he or she presents pathology. The chief distinction, however, between true group medicine and the loose organizations above referred to is the incorporation within the group of the "integrator" system, so well described by Barker. The primary aim of group practice is service, particularly to the patient and to his family physician. No group which does not cooperate to its fullest ability with the practicing physician, both while the patient is under observation and after his return to his own doctor, will be truly successful.

Two facts are today operating to give group medicine an unfavorable reputation. First, some so-called groups have commercialized their work to an extreme degree. The patient is run through the mill, or, as he himself states, he is "put through the group system;" a diagnosis is ground out; the patient is charged a not insignificant fee; and is sent on his way with a new diagnosis and little or no treatment, with voluminous but inconsequential reports and recommendations to the family physician. He has paid his fee for a new name and on his return home the same old treatment continues. Diagnosis without proper treatment based upon the findings is of little practical value to the patient. In these organizations one finds more group than medicine.

The second factor operating against the reputation of group medicine lies in the combining of insufficiently trained men, usually in small town hospitals, who import incompetent technical assistance particularly in the pathological laboratory and in the x-ray department. If the various fields of medicine are not covered, usually one or more of the members takes a two or three months' course in the fields not covered, such as cystoscopic work and electrocardiography, and thereafter considers himself proficient in these fields. The work of such "groups" is necessarily unsatisfactory and errors are frequently made. The unfortunate patient thereafter criticizes group medicine in any form.

In short, just as we find skilled and unskilled physicians and surgeons, we find today scattered through the country efficient, capable groups and inefficient, untrained groups. Just as it has been necessary in the past to know the qualifications of the man who is to be called in for consultation, it now becomes necessary to recognize the qualifications of the group and to choose that one which is doing the best work. The selection becomes more difficult because one is dealing with several individuals instead of one. One inefficient man may vitiate the value of the entire group. No chain is stronger than its weakest link. Errors of examination or interpretation in any one field may negative the value of all the remaining findings. Dependence on the reports of a partially trained subordinate has caused error in some of the best known groups. This is exemplified in such a simple procedure as the routine history and physical examination. Too often this is left almost entirely to the interne. The internist contents himself with auscultation of the heart and lungs and palpation of the abdomen. This procedure impresses the patient with the fact that he has been examined by the head internist, but often adds little to the examination. In some groups, after this cursory examination, the integrator sees no more of the patient until all the records are in, when he, depending almost entirely upon the findings of others, informs the patient of the conclusions, discusses treatment in a general way, shakes hands and bows him out. This is the swivel-chair method of group practice.

Again, it is imperative for proper functioning of the group that organization

and administration be not dominated by one individual. It is a rare group in which all members are of equal prominence and personality. Usually either the surgeon or the internist, less frequently one of the other specialists, has developed a wider reputation than the others. Not infrequently, in fact, the group has been organized by such a man around himself as the nucleus. Such a man is not infrequently one who has accomplished what he has by hard work and fighting, and who has thereby developed a dominating, and sometimes intolerant attitude. When, however, such a man is sufficiently broad and liberal to subverse his own ideas to the best interests of the group as a whole, the group will work satisfactorily. The successful internist or surgeon will either associate with himself men whom he believes to be as competent in their fields as himself in his, and thereby build the strongest type of group, or, if controlled by a desire to dominate, he will surround himself with relative incompetents, thus destroying from the outset the possibility of developing a successful cooperative group.

As far as work within the group is concerned, team work is indispensable. There must be no friction, and all must cooperate at all times for the best interests of the patient. Petty rivalries and jealousies are as out of place in the partnership of a group as they are within the portals of the home.

It is not necessary that every specialty be represented in order that the group function efficiently. Occasionally the local conditions render it advisable to omit certain specialties from the group. Thus, most people have their own dentist whom they would prefer to a strange man associated with the group. Nowadays even ophthalmologists and oto-laryngologists will often fall under the same classification. A group may be built on a basis of a few specialties, but the men in these specialties must recognize their own limitations and unhesitatingly call in consultants for the occasional cases falling in fields not covered within the group.

RELATIONSHIP OF GROUP TO PATIENT

It is not necessary that every patient be studied by every member of the group. This would entail an unnecessary financial burden to the patient and a considerable waste of time for all. It is, however, necessary that each patient be thoroughly studied by every man in whose specialty he evidences pathology. That this may be accomplished it is essential that at the outset he be examined thoroughly by some individual whose specialty is sufficiently comprehensive that he will cover in a general way the patient's entire system. This work naturally falls to the internist. He must be sufficiently trained and possessed of sufficient judgment to recognize the need for more detailed study in particular fields, and must request such studies.

But the internist or integrator must not be content to be a mere director. Some individual must know the patient thoroughly, both physically and psychically, and must sponsor and support him as he is being conducted through the maize of "the group system." It is he above all others who must preserve the personal element which is so often lacking in group practice, and who must immediately become the friend and confidant of the patient. Without this personal contact some even of the best so-called groups have been failures, as far as the patient is concerned. It is not sufficient that the psychiatrist of the group examine him as to mental normalcy. In fully 50 per cent of all invalids, including those with definite somatic disease, there is in addition much to be done in aiding their mental attitude and unless this is recognized and appropriately handled, the "group system" becomes but a factory for grinding out diagnoses, with the attention focussed almost exclusively on the presence or absence of organic pathology. From the nature of their work this intimate personal touch is not as important with the other specialists in the group.

The internist finds it, then, his duty to study the patient's condition in every detail, to reach what diagnostic conclusions he can and to recognize without fail the various indications pointing toward more

detailed studies in special fields. He will then expedite these special examinations, keeping in touch with the individual case at all times. If the results of special examination in one field suggest further examination in yet another, it makes little difference whether the internist or the other specialist requests the additional studies. After the work has been completed the patient's disease status is considered best in consultation of all the members in whose field trouble has been found and appropriate treatment is selected.

Again, it makes little difference who makes the final diagnosis. If the case be found to be surgical, the internist would raise no objection to the surgeon's informing the patient with regard to the diagnosis. The patient is in the care of the group and is under the authority of the internist no more than he is under the care of the other physicians. The question of professional etiquette plays no part in this small matter. But it is true that as a rule there is not a single final diagnosis, but many. Perhaps the average number of diagnoses per individual will be around a half dozen. These should cover all variations from normal found in the individual case. Perhaps only one diagnosis is of immediate importance, but all should be recorded. As a rule, the majority of these diagnoses will be made by the internist. All records should be returned ultimately to him for coordination and for recording the completed diagnoses. His more intimate knowledge of the patient's condition and mode of living may lead him to stress some of the pathologic findings more than others, and will aid him in cases where there may be a choice of methods of therapy.

GROUP THERAPY

I would emphasize that the duty of the group to the patient is but half terminated at the completion of the diagnosis. Group therapy is of as great importance as group diagnosis. I have stated that diagnosis without proper treatment based upon the knowledge acquired is of no value to the patient. From the point of view of the group, especially in those cases where operation is not required, the treatment appears sometimes unsatisfactory in that it is carried out by the family physician and not a group member. Theoretically the man who examines an individual patient the most thoroughly knows the most of the patient's malady, and is the man best qualified to direct the treatment. On the other hand, in most cases the general treatment should quite rightly be left in the hands of the family physician. When the latter is not cooperatively inclined he may neglect or ignore the therapeutic suggestions made. The internist is then helpless.

The further development of group work in and of itself will eliminate to a great extent this disadvantage. If the internist, in his reports to the family physician, describes his findings and recommendations as lucidly and at the same time as briefly as possible and assumes a cooperative attitude, he will receive in return the cooperation which he gives. This is a situation where the personal element enters and each group must work out its own system.

The treatment by the group of invalids under their care also varies with the groups, and at present it is superfluous to try to describe a standardized system for the division of the labor. The one point that I would emphasize particularly is the necessity of avoiding a tendency towards "passing the buck" into which any of us may fall where two or more individuals are treating the same patient. This again is a matter of individual personality and one's sense of responsibility and accountability to the patient and to the other members of the group.

RELATION TO FAMILY PHYSICIAN

Perhaps the greatest present antagonism to group practice is found in the attitude of the occasional family physician. This is not because he disapproves of advances or improvements. There are many good men in this field who welcome whole-heartedly any improvement in medical practice. Where antagonism exists it usually has a foundation in unsatisfactory past experiences. The practicing physician is the patient's personal adviser, and from this intimate contact can be of service in many a way which the group could never accomplish even should it so desire. The alert physician sends his patient to

the group for whatever examinations he is not equipped or qualified to make, and it is the duty of the group to make those examinations and return the information to the physician so that he may the better care for his patient. The group sees the patient for a few days or at most a few weeks; the physician sees him throughout the remainder of his life.

One of the greatest needs of group practice today is the development of a satisfactory system of cooperation with the family physician. In the group which I have helped form this has been worked out apparently to the satisfaction of the physician. Each hospital patient is under the combined care of the various members of the staff. From the moment of a patient's admission, as far as that individual case is concerned, his own physician becomes a functioning member of the group and is kept informed at all times of what is being done, and his opinions and suggestions are welcomed. If the physician lives in the city he visits the patient as frequently as he desires and is given all due facilities. If he lives out of town he is kept informed at frequent intervals by letter. In either case, when the patient leaves the hospital the physician knows what has been done and can competently take up the treatment where it was left off and continue without change and without delay.

CONCLUSIONS

Group practice is a distinct advance in clinical medicine. It is not without its shortcomings and these should be recognized and remedied if possible. Most of the discussions of group practice so far have either been laudatory ones made by members of groups or condemnatory ones by non-members. We have now reached a stage where members of groups, who from their experience are best able to recognize the weak points and shortcomings of the system, should air these disadvantages and attempt to remedy them. Group practice in some form has come to stay. The final form will be far different from the present one. It is the duty of us who are interested in the work to devote our energies to establishing the most satisfactory form.

A specialist in any one line tends to become one-sided. So also group practitioners may become biased in their judgment as to the relative value of the group. At present I am under the impression that perspective would be better retained if each group member had in addition to his group work an entirely disassociated practice in his own field, thereby retaining at the same time the point of view of the individual practitioner. He would divide his time between the two services. The individual practitioner of medicine is not doomed to extinction. The family physician will last and will remain the keystone of medical practice. Probably his development will progress more rapidly from the impetus given by group practice. I anticipate the day when there will be two forms of family physician, one with a minimum medical training of two or three years, who will give to the public a service which is now being usurped by the chiropractors, osteopaths and Abramites; and a second more technically trained individual corresponding more to the present-day internist. These two types of physician will work in cooperation, both with each other, and with the more highly specialized branches. Medicine will then have developed to a point where all competent physicians are organized for highest efficiency in service to the public.

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DISCUSSION

Papers of Dr. McBride and Dr. Vaughan.

Dr. D. C. Walt, Little Rock, Ark.—As a general practitioner I think the specialist is made more secure on account of our method of caring for patients only when we have to. We are not progressing as we should because we wait to cure the patient of some well defined symptoms instead of caring for him to keep him from developing a diseased condition that we can classify by symptoms. I do not like the group system, because I would not like to confine myself to any one man that did not in my opinion meet the requirements.

I have attempted a line of work that I have grown interested in. I do not care for patients unless they will cooperate with me in trying to keep their physical condition the best possible by constant care. I have them come to my office at intervals as indicated from every day to once a month, or longer owing to conditions. I examine the blood pressure, lungs, heart, skin and mucous membranes, the vessels of the eye, pupils

and finger nails, also weigh the patient, give of course a complete examination of the other organs, and the blood, urine, etc., as indicated.

The vessels of the eye, mucous membrane, the skin and blood pressure with the cultivated touch of the pulse will give the every-day changes that will make it possible for us to prevent graver symptoms from developing.

I have continued this class of work for a number of years and been able to keep the patients interested in helping me care for them with a daily effort for ten, fifteen and twenty years, and they realize the value in their high grade of efficiency.

While I have the specialist examine my patients when necessary, I never consider any patient's condition such that he does not need general care, and I think the practitioner knows better how to render that service than the pathologist or other special men. I never voluntarily turn a patient over to another for complete control unless I do not expect to treat him any more.

Dr. Sydney R. Miller, Baltimore, Md.—I would be unfair to my conscience if I did not voice my opinion that I disapprove of group medicine as a business. My reason is this. I think the charge that has been brought against group medicine in general of commercialism is not true. I am open to conviction as to whether the many groups that are springing up throughout the country best meet the needs of the public and maintain the personal contact that I personally feel is absolutely fundamental to satisfactory practice. My own personal view is that the aim should be towards developing all future groups in medicine as well as present ones into individual groups, that is, each person should be his own group. I do not mean that there should be no association whatever, but I do feel that in attempting to practice medicine in groups far too many men have been made automatic in their working, one depending on the other to do the essential work and depending too much upon things which are not essential. For example, look at the number of simplified basal metabolism apparatuses that are being foisted on the medical profession and going into doctors' offices and the number of men attempting to use these instruments without knowing the inherent dangers.

We find people springing up as specialists in protein sensitization. The medical profession has always shown a tendency toward faddism and group medicine at the present time is a fad which, unless properly curbed, is going to do a great deal of harm and has already done it in terms of dissatisfaction among a great many general practitioners. Most practitioners are men of intelligence and most practitioners can arrive at an accurate diagnosis of their cases in practically 70 to 80 per cent of the cases if they will employ their own intelligence and not to try to use these highly specialized methods.

I do not mean to imply that any one of us can be perfect in most of the things that are called specialties, but that the average practitioner should know how to examine the eye grounds, transilluminate a sinus, make bacteriologic examinations, do a simple blood count, know when albumin is significant and when it is not, etc.; and if you take the sum total of all these methods you will find that they constitute the basis for the specialism of the day. You will find, if you analyze them, that they have not increased our diagnostic ability. Moreover, these groups have not gotten very far ahead with what is more important still, therapeutics. I am inclined to feel that unless we look out we are going to lose out with the public because of the lack of personal contact. This is no criticism against good group medicine. I know there are groups very splendid in their working. What I am speaking of is the tendency toward which medicine is moving, whereby the practitioners have become aware of their own paucity in material income as compared with that of the specialists in the larger cities, resulting in lack of normal medical attention in the smaller rural communities.

Dr. T. Z. Cason, Jacksonville, Fla.—Since 1919, I have been with a so-called group. We say we are associated. We want to get away from the term "clinic" because that has gotten in bad. There are a few points I would like to bring up. In the first place I do not altogether agree with Dr. Vaughan that the group must be composed of men of equal ability. I do agree in this sense, that the head of each group, surgical, medical, gynecological, must be of equal ability, but there certainly could be some men in each department, working under the head of that department but responsible to the other men in the group, men who have the respect of the other doctors, but who are not equal in ability to the head of the department.

That brings up another point: how far are we to go in our advice to the patient who is referred to us by some one from out of town. Are we to give him the diagnosis in full and outline the treatment in detail, or to communicate directly with the doctor back home and let him handle the matter? Possibly the only way to settle this is by the individual case.

Since the first of June we have had our outpatient department in our hospital. So far we believe this to be the ideal arrangement.

Dr. L. B. McBrayer, Sanatorium, N. C.—I want to state a few things that I consider fundamental in the practice of medicine today. Our present medical education does not fit a man to become a specialist and yet the majority of graduates in medicine want to bloom out into specialists immediately. There is more or less drouth of practitioners in the country throughout the South and I am not very much surprised. We are requiring a certain kind of medical education, requiring the men who study medicine to pursue that course and pass an examination before the state board of medical examiners before they can practice in any state, and then if a man goes out in the country he cannot use what we require him to study. Group medicine is an effort on the part of our profession

to apply the science of medicine to the patient. It is an evolution. I heard of a patient who went into a group in a certain Southern state, sent there by a general practitioner in a country town. He stayed a week, spent $200.00 and decided to come home and rest and get some more money. That is the tendency of many of these groups. That is a very serious criticism. It is a fact, nevertheless, that the people are not getting what is coming to them from the medical profession. I do not think any doctor will gainsay that statement, and, what is more, the people know it. A great many of those who do not are fast finding it out. That is a very serious question for the medical profession to solve. The people are going to demand sooner or later better service and more capable service from the medical profession than we are giving. Group medicine is an effort on the part of the medical profession to supply that need. In my State a layman wrote this in an editorial: "Medicine is a science; the application of the science of medicine to the patient is an art; a great many men who are applying the science of medicine to the patient are very poor artists." When a layman begins to think such things and when they write such editorials, it is time for us at least to put our ears to the ground and hear the rumblings.

Dr. E. B. Bradley, Lexington, Ky.—It seems to me that of the objections to group medicine there are really only three that are important. The first of these is that the group loses personal touch with the patient; second, that it commercializes medicine; and third, that the best consultant is not always selected. There are other objections, but they are more easily answered.

Dr. Miller practically confesses that he does practice group medicine. In a city like Baltimore he has a wide choice of different specialists. However, I dare say that he utilizes to a great extent one specialist for the nose and throat, another for genito-urinary diseases, another for roentgenology, etc. He practices group medicine without actually being a member of a group. As Dr. Vaughan brought out in his paper, a group is no stronger than its weakest link. If there is a specialist in the group who is not capable of making expert examinations, he has no business in the group. All patients are entitled to the best advice whether it is from a member of the group or from one outside of it. Belonging to a group does not keep one from getting advice of some one entirely disconnected with the group in case it is thought advisable.

By commercialism in medicine I suppose is meant exploitation of the patient in order to make money out of him. Those who make this objection say that it is more expensive to make group examinations; secondly, that there are many useless examinations made. Personally, I do not believe that it is any more expensive to the patient for the same number of examinations to be made by a group than by different specialists situated, it may be, in different parts of the city. The doctor in the group who is responsible for the patient usually has the right to say what the patient should be charged. In a very large percentage of cases the total fee of the examinations is much less than it would be if the patient had to pay a separate fee to each specialist.

This is the great advantage in being a member of the group: the fact that in every case if he considers it necessary the physician can have different specialists examine the patient and all the necessary laboratory work done, even though the patient is able to pay only a nominal fee. The member of the group does not feel that he is imposing on his colleagues. He might if he did not belong to a group. The objection that personal touch between the patient and physician is lost may or may not be valid. This will not be true if the group is conducted properly. Necessarily many examinations are made by others, but each group should have in it one physician who is responsible for the patient and to whom the patient may turn for advice. If the survey is only diagnostic in its nature, the family physician must still with a full knowledge of the group's findings exercise the same care as in all other cases.

Dr. C. L. Minor, Asheville, N. C.—There is one thing I would like to dwell on. If there is a tendency toward commercialism, I think the psychology is simple. When a man handles his own patients the human element comes in. You know the patient personally. You will think of that much more than of any reward. When you see a patient in a group the difficulty of knowing him and giving that personal contact is absent and naturally the other side comes more to the front. The extreme difficulty of group medicine is the question of the psychology, the contact between doctor and patient. That is a difficult thing in any practice. We know that some men are so built that they cannot come in very close contact with the patient, but certainly with the old-fashioned regular practitioner that element of medicine was an important one. Your patient was your friend and not just No. 27. The doctor who gets closer to his patients will accomplish more. That personal contact is what is missing in group medicine. It is infinitely difficult to establish such a contact under group conditions. It is not a thing for which I feel I have any solution. We are in evolution and something is going to work out of it. The public is not satisfied and if the public is not satisfied the profession has got to do something to satisfy it. We have to make the patients feel we are personally interested in them. If group medicine can satisfy the patients that we have their personal interest at heart it is going to win. If not, it is going to die. Patients have told me when they visit these groups they feel as though they were run through a machine. They saw Dr. Jones and probably he was very scientific, but they felt they did not get the interest of Dr. Jones. In so far as Dr. Jones fails to show interest in his patient, no matter how scientific he is, he will not make a success of medicine.

Dr. T. P. Sprunt, Baltimore, Md.—Because we are in a process of evolution it is always difficult to predict the path that the evolution is going to take. We have some knowledge of medicine. How would we ourselves like to be treated? I think that group medicine in some form is going to stay; whether it will be in a compact group or of a looser type will depend a good deal on the circumstances. In the smaller communities the compact group will be the only type available. It is not so much improvement in the general practitioner's work as it is a check on the specialists' work that we need. I was very much interested in Dr. Miller's apotheosis of the general practitioner, and I hope that with improvement in medical education it may become a true picture. It seems to me that medical education is now tending to train men to be specialists. They are taught in the department of medicine certain definite diseases, in the department of surgery surgical technic in certain definite surgical diseases, in the department of laryngology diseases of the nose and throat. There is very little taught about chronic diseases or about the correlation of lesions and the integration of diagnostic studies; and this information is, I think, the most important factor in group medicine. The financial situation is, of course, important as well as the personal relations, which have been so much emphasized. I think the members of a group can maintain as close personal touch with the patient during the period of therapy as the general practitioner can, but an effort should be made to maintain a closer personal touch even while he is going through the diagnostic study.

Dr. Sydney R. Miller, Baltimore, Md.—There are just two points I wish to bring out. One is the question Dr. Bradley mentioned about making it more readily possible for a patient with small means to have a complete study in a group. That is not true in Baltimore. A patient comes in to me and says he can pay $25. He is able to secure on a pro rata basis whatever service he needs.

The other point I want to emphasize is that I personally hold myself responsible for the diagnosis. In other words, I think one of the crimes of the day is the facility with which a patient who is presenting symptoms of disease in the intestinal tract, or the genito-urinary system, or any other system, can go to a laboratory and have a diagnosis made. If you would use your God-given intelligence you would save annoyance, time and finances.

Dr. C. L. Minor, Asheville, N. C.—Diagnosis can be worked out by a group, but when it comes to the question of planning out the treatment, it must be the product of one mind. Diagnosis can be the consummation of many men's thinking, but not treatment.

Dr. McBride (closing).—It is not surprising to me that men who do not practice group medicine should attack it. It is surprising, however, that one who really practices group medicine, as Dr. Miller does, is so anxious to avoid the term and is unwilling to place his confreres so they will be easily accessible to the patient and to himself for frequent consultation. If he does not believe it works a hardship on the patient I will tell him that a lady recently told me she had carried her husband to Johns Hopkins for medical care and that they spent more time and money on taxi fares going from one physician to another than they did on doctors' bills. Dr. Miller admits that he does frequently send patients to other specialists and that they divide proportionately whatever fee the patient can pay. I do not want to criticize his method, but I do say that one fee paid to a group with all the physicians consulted under one roof would be more business-like and get more accurate results than any loose co-operative plan.

As for the question of individual touch, it would not necessarily be lost. Each specialist gives the patient all the attention he needs in his department and sends him back to the internist, who puts all the findings together, his own along with the others. He spends all the time necessary and puts whatever interest into the case that he desires or that the patient needs.

I cannot understand the criticism of commercialism. From the start our difficulty has been to arrange our fees so they would not interfere with our doctor friends in the city. We have constantly found ourselves charging the patient in each department only the actual cost of his investigation and allowing the internist to charge an ordinary fee for his services, making, so to speak, a profit in only one department, whereas the same patient would pay under the old plan each doctor's fee, the aggregate of which would be much more than ours. We do not intend to commercialize medicine, neither do we wish to be in the attitude of underbidding our colleagues. But there are many things which could be said pro and con on group medicine. I would suggest that those who do not know about it investigate it, for it has, I believe, come to stay. It means too much to both the doctor and the community to be merely a passing fancy.

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EDITORIAL DEPARTMENT

SOUTHERN MEDICAL ASSOCIATION
Seventeenth Annual Meeting, Washington, D. C.
November 12-15, 1923

ARTERIOSCLEROSIS AND HYPERTENSION

There are four types of arteriosclerosis, according to Dr. Geoffrey Evans,* to-wit: nodular, diffuse hyperplastic, senile, and Menckeberg's sclerosis, although these do not include all the varieties which are encountered.

The type which he discusses at greatest length is that which is termed "diffuse hyperplastic sclerosis," which is the "diffuse arteriosclerosis" of Osler. Dr. Evans regards the nature of arteriosclerosis as essentially inflammatory. "The essential lesion of diffuse hyperplastic sclerosis is a thickening of the intima in the smaller, and smallest arteries," and this lesion constitutes the structural change by which this type of sclerosis is recognized. It occurs "chiefly, or only," in the terminal arteries and their parent vessels. It is found most often in the kidney and may occur in this organ alone, but more commonly in both kidney and spleen. Next in frequency of involvement is the brain, and then follow the pancreas, liver and adrenals. The vessels of the stomach and intestines are less often affected and it is extremely uncommon in those of the heart. This localization of the process is a very striking feature and accounts for the varying clinical picture which is met with.

The intimal thickening consists of proliferated endothelial cells, connective tissue and elastic tissue, and hyaline intercellar substance, and represents a very active process. In most cases, but not in all, there is hypertrophy of the media which is probably the result of the increased blood pressure that is usually present. This medial hypertrophy, however, is not regarded as an essential or constant factor.

The most important clinical evidence of diffuse hyperplastic sclerosis is the so-called idiopathic hypertrophy of the heart, meaning by this term hypertrophy that is not due to disease of the heart or lungs. This hypertrophy, as well as the thickening of the intima, is to be regarded as a compensatory phenomenon. "The one essentially pathological sign of diffuse hyperplastic sclerosis is renal sclerosis in one of its several forms." Associated with cardiac hypertrophy is elevated blood pressure, and these two clinical signs are regarded as definite indications of diffuse hyperplastic sclerosis. The height to which the mercury must rise to afford evidence of sclerosis may be a subject for discussion, but Evans thinks that a systolic pressure of 180 may be considered fairly as outside the normal range.

The clinical evidence of diffuse hyperplastic sclerosis are likewise the important clinical indications of hyperpiesia. Hence, it is concluded that the latter is the clinical expression of the former condition. While medial thickening may be explained by an elevated blood pressure,

*Evans, Geoffrey: Gaulstonian Lectures, Brit. Med. J., XXIV, 31, March 17, 1923.

mechanical strain cannot account for endothelial cell proliferation and subsequent fatty degeneration; nor can it explain the chief incidence of the lesion in the kidney and spleen, and its comparative infrequence in many other organs and especially its absence from the skeletal muscles and heart. If increased blood pressure fails to account for the development of diffuse hyperplastic sclerosis which is the pathological expression of hyperpiesia, and the older view that the vascular lesion is responsible for the clinical phenomena be abandoned, it is obvious that the two conditions must be due to a common cause.

Renal sclerosis constitutes another group of diseases in which these clinical phenomena appear. "There is some degree of renal sclerosis in all cases of diffuse hyperplastic sclerosis, and there is some vascular lesion in all cases of renal sclerosis." In chronic nephritis there is a tendency for the kidney lesion to be associated with diffuse hyperplastic sclerosis and cardiac hypertrophy, but vascular hypertension and hypertrophy of the heart, although characteristic, are not essential features of the clinical picture. While it is possible to assume that in the arteriosclerotic group the vascular lesion is the cause of the renal lesion, this is unlikely, as in chronic nephritis it cannot hold. It seems more logical to assume that diffuse hyperplastic sclerosis, hyperpiesia, and renal sclerosis are due to the same cause, and from the evidence in hand it is probable that this cause is circulating bacterial toxins.

The question of the mechanism of the production of hypertension remains unanswered. More forcible heart action and raised vascular tension, resulting in cardiac hypertrophy and medial thickening, are probably due to obstruction in the capillary area. If this be true we shall have to assume that the toxin or toxins which cause the inflammatory reaction in the smallest vessels likewise exercise a constrictor action upon the capillaries. This offers a fertile field for investigation.

URETERAL RETENTION CATHETER DRAINAGE

The use of the ureteral retention catheter has become common in urological therapeusis, notably in the treatment of pyelitis, pyelonephrosis and impacted stones. It has restored to usefulness many a kidney which at first thought might be considered useless and requiring nephrotomy or nephrectomy. The remarkable faculty of the kidney for improving its function under such circumstances must be observed to be fully appreciated.

Fixation of the Ureteral Catheter.—After introduction of the catheter comes the problem of fixing it in place. The practice of wrapping a piece of adhesive plaster about the catheter and then fastening this to the inner aspect of one thigh, is to be deplored because flexion and extension of the thigh are apt to dislodge the catheter; and turning of the patient on the opposite side renders catching of the urine troublesome.

If adhesive is fastened to the catheter and then wrapped about the body of the penis, or is attached to the vulva or groins, voiding of bladder urine (from the opposite kidney) will soon soak the adhesive and render it useless, with the result that it will slip up and down like a loose cuff.

The most practical technic is to tie a heavy piece of linen or silk ligature snugly about the catheter near the urinary meatus; and an inch or more from there attach each end of the ligature to a piece of adhesive plaster. This latter can be fastened around or along the sides of the penis in the male. In the female, it is

well to shave the upper vulva and groins and extend the adhesive along the groins.

Unstopping of Catheters.—Plugs of mucus, pus and blood clot obstructing the catheter demand careful attention. When stoppage is noted if the patient is able to cooperate, simply a few hearty coughs will often clear the catheter lumen and reestablish the flow. If this fails, and the patient is physically able to be moved, the kneeling posture with the body erect, and a repetition of coughing will further increase the chances of expelling the obstructing material. A little routine coughing every hour or so is excellent prophylaxis against stoppage.

Should this fail, irrigation of the kidney pelvis, beginning with gentle suction rather than injection, will become necessary. Suction is more effective if coughing accompanies it.

A large ureteral catheter, size No. 9, is desirable, but not always capable of being introduced. An average of less than 8 or 10 drops a minute, when water is freely taken, is suggestive of stoppage. Twenty or thirty drops a minute would be better.

Kidney Irrigations.—Although this is a routine with some, the need of irrigation is debatable in many instances. For example, if the kidney pelvis is normal or little increased in capacity, the urinary output is abundant, there is no evidence of stoppage of the catheter, the patient seems to be doing well and the fever and other toxic symptoms are abating, little can be gained by irrigations. On the other hand, if the kidney capacity is increased, say to 10 mils or more, or if any of the above conditions do not obtain, much may be gained by insuring a clearing out of the contents of the kidney pelvis by irrigation from one to three times a day. Of course, no force should be employed.

Irritating substances such as mercurochrome should be avoided. Instead, bland solutions of normal saline, boric acid, acriflavine 1-2000, etc., are better than drugs yielding precipitates, e. g., silver nitrate, argyrol and the like, however bactericidal they may be. The benefit is largely cleansing and not antiseptic.

Amount of Forced Fluids.—Since water in too great a quantity can do actual harm, specific directions should be given the nurse. Fluids are used to increase the urinary output and that alone should be the guide. In an adult 3000 mils of urine in 24 hours should be the general maximum and if the patient responds readily, the amount can be reduced safely to 2000 mils or thereabout. It is better to push the liquids mainly by day so that rest may not be interfered with at night.

Duration of Ureteral Catheter Drainage.—This is variable. If the temperature soon drops to normal, it is a sign that probably the kidney parenchyma is very little involved. In such an instance the catheter may be withdrawn in two or three days. Where fever, chills, nausea and vomiting evidence continued toxemia, and the catheter lumen can be kept patent, the catheter may be left in place for seven to ten days. After that it is well to withdraw it because the patient may then be able to do without it. If not, a fresh catheter can be replaced. The presence of a retention catheter has a tendency to soften a constricted area. It is often demonstrable by having the irrigation fluid return around the catheter into the bladder. When that takes place, the presence of the catheter is no longer needed. A catheter may permit the passage of urine and yet be partially clogged with sediment so that it serves as a sort of filter and keeps back the more solid lumps of mucus, pus and blood.

Finally, one should avoid making pyeloureterograms during the acute febrile stage of kidney infection. Likewise, all things being equal, it is generally unwise to attempt to dilate a ureteral stricture or remove a calculus during that stage, but instead one should drain the kidney pelvis with a ureteral retention catheter where possible until the patient has reached his or her optimal improvement. Differential functional tests are useful throughout the course of the illness as a comparative index to progress.

TREATMENT OF HOOKWORM

The most striking advances in preventive medicine of late years have been in the prevention of infectious diseases. Among the most striking advances in curative medicine have been the methods of treatment of infectious diseases.

Hookworm has been treated with varying degrees of success with several different drugs. Thymol, beta-naphthol, chenopodium and recently carbon tetrachlorid have been extensively used as anthelmintics. The latter appears from comparative experiments[1] to be more efficient than the other three mentioned, and to be safe when properly administered.

In this number of the JOURNAL[2] appears a paper describing the results of treatment with carbon tetrachlorid of infected soldiers at Fort Benning, Ga.

Three mils is an average dose and one or two treatments are all that are necessary. In larger doses it has been shown by experiments upon condemned criminals, who were autopsied after execution, in an occasional instance to produce lesions of the liver.

Hospitalization during treatment is not essential, which is a distinct advantage. The patient is sent away after dosage with the admonition not to partake of alcohol. Lambert,[3] who reports observations upon the treatment with carbon tetrachlorid of 20,000 cases of hookworm infection, concludes that it is an unusually efficient anthelmintic. It also has been found to be very efficient upon dogs.

Clinically, in doses of three mils this drug has been shown to be efficient in the removal of hookworms from the human intestinal tract. In this dosage it is not toxic. It is not an expensive drug, and during treatment with it hospitalization of the patient is unnecessary. Evidence, on the whole, points to it as probably the best means of combating this disease. In the South there is ample opportunity for putting this treatment of uncinariasis to further test.

Book Reviews

Carriers in Infectious Diseases. A Manual on the Importance, Pathology, Diagnosis and Treatment of Human Carriers. By Henry J. Nichols, M.D., M.A., Major, Medical Corps, U. S. Army; Instructor in Bacteriology, Parasitology and Preventive Medicine, Army Medical School, Washington, D. C. With a Section on Carriers in Veterinary Medicine by R. A. Kelser, D.V.M., M.A., Captain Veterinary Corps, U. S. Army; in Charge Veterinary Laboratory, Army Medical School, Washington, D. C. 184 pages. Baltimore: Williams & Williams Co., 1922.

In this little book the author has summarized the present day concepts of the carrier problem or, as he chooses to call it, "the science and art" of "phorology." Disclaiming any intention of writing a complete text book with historical and bibliographic development, he sets himself to the goal of compressing into small space all that is most valuable in current medical theory and practice within the field covered.

Part I deals with general considerations. It considers the carrier from the public health viewpoint and presents the general pathologic principles involved in the production and continuance of the carrier state, together with the rationale of diagnosis and treatment.

Part II deals systematically with individual diseases. For each there is a general survey of the particular problems presented, a short statement of the significant pathology, indication of the essential points in determining clinical and laboratory diagnosis, and description of the technic to be employed for the collection of diagnostic specimens. Finally, there is a short statement on treatment.

Part III sketches the general program employed for carrier work in preventive medicine. The book is concluded with a review of "Carriers in Veterinary Medicine," which deals with bacteria and protozoa pathogenic for both man and the lower animals, as well as for the lower animals alone.

The author covers much ground in few words. The book is valuable for the general physician and a necessity for the health officer.

1. Docherty, J. F.: J. A. M. A., August 11, 1923.

2. Cooper, A. T.: This issue, p. 689.

3. Lambert: J. A. M. A., December 16, 1922.

Southern Medical News

AMERICAN ROENTGEN RAY SOCIETY

The annual meeting of the American Roentgen Ray Society will be held September 18 to 21 at the Congress Hotel, Chicago. There is to be a number of eminent contributors from foreign countries. High voltage x-ray will have a prominent place on the program. Any one doing x-ray work will find this meeting of special interest

MEDICAL WOMEN'S NATIONAL ASSOCIATION

The ninth annual meeting of the Medical Women's National Association was held in San Francisco, June 25-26, in conjunction with the American Medical Association meeting, Dr. Grace E. Kimball, Poughkeepsie, N. Y., President. Dr. L. Rosa H. Gantt, Spartanburg, S. C., was re-elected Treasurer. The next annual meeting will be held in Chicago, June 1924.

ALABAMA

It is said that Tuscaloosa is the first city in the State to adopt the State's new model milk ordinance. Gadsden adopted the law June 19. The modern law establishes a uniform grade of milk throughout the State and protects both the dairymen and the consumers.

Dr. Seale Harris, Birmingham, has established in the medical department of the University of Alabama, Tuscaloosa, the Ann Monks Harris scholarship in memory of his mother.

The Federal Government has reappointed Col. William D. Wrightson, son-in-law of the late Gen. William C. Gorgas, as malaria expert, with jurisdiction in ten counties in Northern Alabama.

Deaths

Dr. John Mordecai Anderson, Montgomery, aged 57, died June 30 from pneumonia.

Dr. Edward Burton Ward, Selma, aged 63, died June 10.

Dr. H. L. Wade, Liberty, died recently.

ARKANSAS

Missouri and North Arkansas Railway Surgeons met jointly with the White County Medical Society in Searcy recently.

Dr. Arley Doyne Cathey, El Dorado, and Miss Ida Neumann, Stuttgart, were married recently.

Deaths

Dr. DaCosta Walker, Hot Springs National Park, aged 42, died suddenly June 30 from heart disease.

Dr. Oscar Eve Jones, Newport, aged 40, died suddenly July 14 from heart disease.

Dr. Noah S. Kite, Pine Bluff, aged 83, died July 4 from senility.

DISTRICT OF COLUMBIA

The General Education Board, New York, pledged $250,000 toward an endowment for Howard University School of Medicine provided the University would raise a similar sum through public subscriptions by July 1. Howard University has raised more than that amount. Isador Straus contributed the last $3,000 of the needed sum. Following this contribution colored people from various parts of the county pledged an additional $15,000, making a total endowment of $515,000.

Dr. MacPherson Crichton and Mrs. Muriel Lynch, both of Washington, were married June 9.

Deaths

Dr. Stephen Driver Brooks, Washington, aged 69, died July 4 at Los Angeles, Calif.

Dr. Alice Laura Scott Hill, Washington, aged 66, died July 3.

FLORIDA

Dr. A. C. Hamblin, Tampa, has resigned as District Health Officer for the State Board of Health and has accepted the position of City Health Officer of Tampa.

Deaths

Dr. Stephen Russell Mallory Kennedy, Pensacola, aged 45, died July 11 from heart disease.

Dr. D. Fort Anderson, Orlando, aged 93, died June 10 from senility.

Dr. William Horace Sibley, Jacksonville, aged 78, died recently.

Dr. George Delos Kennedy, Mandarin, aged 42, died suddenly July 13.

GEORGIA

Dr. H. N. Page, Augusta, has been appointed Chief Surgeon of the Charleston and Western Carolina Railway.

Jefferson County Medical Society was recently reorganized. Dr. J. J. Pilcher, Wrens, was elected President; Dr. W. B. Jordan, Bartow, Secretary.

Wilkes County Medical Society was recently reorganized. Dr. Lewis R. Casteel, Metasville, was elected President; Dr. Charles E. Wills, Washington, Vice-President; Dr. Addison W. Simpson, Washington, Secretary-Treasurer.

Seven counties of Georgia, Cobb, Decatur, Baldwin, Washington, Telfair, Clark and Wilkes, want the health demonstration which the American Child Hygiene Association will establish and support for five years somewhere in the South. The Southern unit will comprise a mothers' clinic, a baby clinic, a training school for mothers and an educational campaign for better babies.

Robert F. Maddox, Atlanta, President of the Atlanta National Bank, has been elected President of the State Board of Health, succeeding the late Dr. William H. Doughty, Jr.

Dr. A. F. Weathers, Shellman, has moved to Albany.

Dr. A Richard Bliss, Jr., Professor of Pharmacology, Emory University School of Medicine, Atlanta, resigned to accept the professorship of Physiology and Pharmacology at the University of Tennessee.

Dr. D. T. Rankin, connected with the Georgia State Sanitarium, has resigned to become a member of the staff of the Allentown State Hospital for the Insane, Allentown, Pa.

Dr. V. H. Bassett has been elected City Health Officer for Savannah.

Dr. Wm. H. Goodrich, Augusta, has been elected Dean of the University of Georgia School of Medicine, succeeding the late Dr. William H. Doughty, Jr.

Dr. Seale Harris, Birmingham, Ala., has established in the Medical Department of the University of Georgia the James Coffee Harris scholarship in memory of his brother.

Deaths

Dr. Frank E. Howald, Atlanta, aged 62, died July 14.

Dr. William Henry Doughty, Jr., Augusta, aged 67, died June 22.

Dr. John Henry Griffin, Armuchee, aged 47, died June 27 at a hospital in Atlanta.

Dr. James W. Lambert, Luthersville, aged 75, died June 16.

Dr. Miller Bone Hutchins, Atlanta, aged 59, died July 6 from cerebral hemorrhage.

Dr. John Alvin Alley, Atlanta, aged 51, died July 3.

Dr. James Jackson Watkins, Glennville, aged 59, died June 9.

Dr. William A. Anderson, Atlanta, aged 73, died June 9 from cerebral hemorrhage.

Dr. William L. Sikes, Sylvester, aged 72, died June 22 following a long illness.

KENTUCKY

The Kentucky State Medical Association will meet at Crab Orchard Springs, September 17-20.

Bracken County Medical Society was recently organized. Dr. W. B. Wallin was elected President; Dr. J. C. Norris, Vice-President; Dr. J. M. Stevenson, Secretary-Treasurer.

Estill County Medical Society was recently organized. Dr. Cornelius Marcum, Irvine, was elected President; Dr. S. T. Scrivner, Irvine, Secretary; Dr. A. Agee, Treasurer.

Johnson County Medical Society was recently reorganized. Dr. J. P. Wells was elected President; Dr. G. V. Daniel, Vice-President; Dr. Ernest E. Archer, Secretary; Dr. Paul B. Hall, Treasurer.

Miss Jessie O. Yancey has been selected as the head of a social welfare and health department in the rural schools and community of Fayette County.

Mrs. Anne Traber, Russell, Kas., has been elected Public Health Nurse, to succeed Miss Nellie Baber, resigned.

The State Board of Charities and Corrections has established mental clinics at the Central, Eastern and Western State Hospitals for the Insane.

A Board of Examining Surgeons was recently organized in Tompkinsville. Dr. Arthur G. Cosby, Fountain Run, is President. Other members of the board are: J. T. Smith, Gamaliel; Eugene E. Palmore, Strode.

Dr. John R. Brayton, Hardy, and Miss Bernice Marie Havens, Kokomo, Ind., were married June 30.

Deaths

Dr. John M. Frazee, Maysville, aged 85, died August 1.

Dr. David Woolfolk Barrow, Lexington, aged 41, was killed the latter part of July when the automobile which he was driving ran into a stone fence.

Dr. W. W. Ray, Springfield, died recently.

Dr. Henry B. Myers, Ewing, aged 57, died July 26.

(Continued on page 36)

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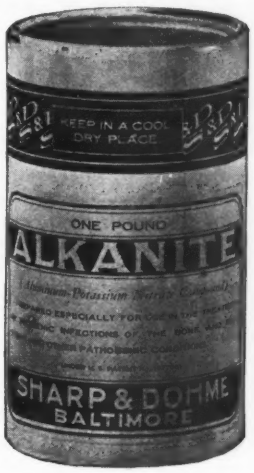

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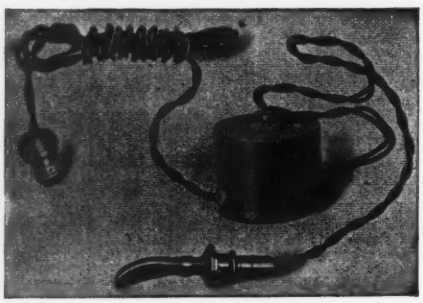

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(Continued from page 736)

LOUISIANA

The Jefferson Parish police jury have appropriated $10,000 toward the building fund of the Charity Hospital, New Orleans. Tangipahoa Parish has appropriated $15,000; the firemen of New Orleans have donated $1,242. On July 14 the fund totaled $257,811. Several thousand more dollars will have to be raised in order to carry out the board of administrators' improvement program.

The New Orleans Commission Council have passed an ordinance granting permission to erect a tuberculosis hospital on the Derby tract in the Seventh Ward. Plans are made to erect two buildings, one with funds from the Anti-Tuberculosis League, the other with funds donated seven years ago by Mrs. John Dibert, which now amount to $400,000. There are 54 acres in the Derby tract.

At the recent annual meeting of the Louisiana State Medical Society the house of delegates went on record as favoring a law that would restrain the insane, feeble-minded, epilectic or persons infected with venereal disease from marrying. A special committee, appointed to draw up a suitable law to that effect, will report back to the house at the 1924 session.

Dr. Urban Maes, New Orleans, was elected Chairman of the Surgical Section of the American Medical Association at the San Francisco meeting in June.

A demonstration of draining mosquito-infested swamps with dynamite was made near Natalbany July 17 to determine the comparative cost of draining with dynamite and the older methods of draining.

Dr. Eric Leonial Major and Miss Mattie Elise Row, both of Rosedale, were married recently.

At the recent meeting of the American Medical Association, held in San Francisco, Dr. Amedee Granger, New Orleans, received a prize, and was especially commended for the scientific exhibit in radiology.

Deaths

Dr. Edgar S. Barry, Grand Coteau, aged 69, died June 30 from carcinoma of the stomach.

Dr. Anthony Joseph Strange, Independence, aged 41, died May 2.

Dr. Charles Leonidas Hoyle, Springhill, aged 73, died June 30 at Warren, Ark., from paralysis.

MARYLAND

The West Baltimore Medical Society will establish the West Baltimore General Hospital, Raynor Avenue and Florence Street, Calverton, Baltimore.

The Edgewood General Hospital, Govans, had its formal opening July 18. The board of directors are: Drs. William J. Pillsbury, Chairman; Harry C. Hess, Harry G. Prentiss, Harry W. Wheaton, Roy W. Locher and Waitman F. Zinn. The hospital has thirty-five rooms and will accommodate ninety patients.

The Child Hygiene Bureau of the State Department of Health plans to establish a child hygiene clinic at Tilghman's Island, where a public health demonstration in the care of pre-school children will be given. Dr. Walter W. Palmer, County Health Officer, and Dr. J. R. Sudler, the only physician on the island, will co-operate in this work.

In order to handle the large number of diabetic patients applying for insulin treatment, a special series of eight clinics under the supervision of Dr. William S. McCann started July 19. Only thirty physicians may attend.

The State Department of Health plans a center at Annapolis for maternity and child hygiene work.

Hagerstown will install a new water system, with the Potomac River as the source of supply. The installation will involve the expenditure of more than a million dollars.

The University of Cambridge, England, has conferred upon Dr. William H. Welch, director of the School of Hygiene and Public Health, Johns Hopkins University, Baltimore, the honorary degree of doctor of science.

Dr. Robert W. Johnson, Easton, held an orthopedic clinic for the examination and diagnosis of crippled children July 23.

Charles County Medical Society has elected Dr. Thomas Carlyle Speake, Grayton, President, and Dr. Samuel J. Fort, LaPlata, Secretary.

Deaths

Dr. Franklin H. Seiss, Takoma Park, aged 63, died July 7.

Dr. William Wood Russell, Baltimore, aged 57, died July 11 at Santa Barbara, Calif.

Dr. John Henry Jamar, Elkton, aged 83, died July 5 from paralysis.

Dr. Henry Peter Fahrney, Frederick, aged 53, died suddenly in June at the City Hospital.

(Continued on page 38)

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Mean less exposure, less movement, less tube replacement, less danger to patient.

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Eastman Kodak Company

Medical Division Rochester, N. Y.

(Continued from page 36)

MISSISSIPPI

Deaths

Dr. William Hillman Hosey, Stringer, aged 43, died suddenly June 10 from cerebral hemorrhage.

MISSOURI

The annual meeting of the Missouri Hospital Association was held in Kansas City, May 14. The following officers were elected: Dr. Rush E. Castelaw, Kansas City, President; Dr. B. A. Wilkes, St. Louis, First Vice-President; Pearl B. Flowers, Fulton, Second Vice-President; Louise Ament, St. Louis, Treasurer.

The new building at the State Sanatorium, Mount Vernon, has been completed and some of the other buildings have been enlarged. One hundred persons can now be received for treatment.

Dr. Nathaniel Allison, St. Louis, Dean of Washington University School of Medicine, has resigned to become professor of orthopedic surgery of the Harvard School of Medicine and to take charge of orthopedic surgery in the Massachusetts General Hospital.

Dr. Nathaniel Allison, St. Louis, Dean of Washington University School of Medicine, has been elected to membership in the Alpha Omega Alpha Honorary Medical Society, in recognition of his scientific work.

Dr. Mazyck P. Ravenel, Columbia, professor of preventive medicine, University of Missouri, has been elected an honorary member of the National Tuberculosis Association because of his original research work relating to tuberculosis.

Plans have been made to enlarge and improve the public hospitals and institutions of St. Louis. An $85,000 x-ray and radium room is being planned for the City Hospital, also the equipping of an eye, nose and throat room at a cost of $3,000, and the increasing of the nursing staff from 33 to 50.

The second annual stag party of the faculty and senior class of Washington University School of Medicine, St. Louis, was recently held at Francis Field. These parties are held to create a stronger alumni spirit.

Dr. Stratton D. Brooks, formerly with the Oklahoma State University, is the new President of the Missouri State Universiy. He succeeds Dr. J. C. Jones, who retired.

Dr. J. J. Ertz, Marion, has been appointed chief of the Wichita Health Department, succeeding Dr. M. O. Nyberg, now Secretary of the State Board of Health.

Dr. James R. McVay, Kansas City, has been appointed a member of the State Board of Health to succeed Dr. F. E. Murphy, who resigned.

The Missouri Pacific Employees' Hospital, St. Louis, has been opened. It has a capacity of 300 beds. Dr. Paul F. Vasterling is the chief surgeon.

At the recent meeting of the Frisco Railroad Medical Association, held in Kansas City, Dr. William H. Breuer, St. James, was elected President.

Dr. G. Wilse Robinson, Kansas City, has purchased the Dyer home in Kansas City for $40,000, and will convert it into a sanatorium.

Dr. Ralph L. Thompson, St. Louis, has resigned as professor of pathology in St. Louis University after twenty years of service. He will give his entire time to laboratory diagnosis. The University will name the museum the Ralph L. Thompson Collection of Pathological Specimens.

Dr. B. C. Bernard has resigned as Superintendent of Koch Hospital, St. Louis, and has been succeeded by Dr. Hyman I. Spector.

Drs. K. C. Cummins and E. C. Braniger, Maryville, were recently made honorary members of the Seth Ray David Post of the Veterans of Foreign Wars.

The United States Trachoma Hospital, Rolla, has been opened. Dr. Robert Sory, of Madisonville, Ky., is in charge.

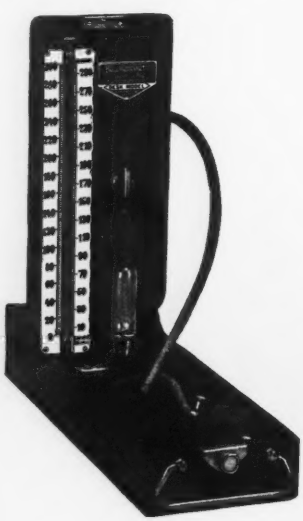
The Medical Department of Washington University School of Medicine, St. Louis, gave a dinner at the University Club, May 28, honoring Dr. Ralph A. Kinsella. Dr. Kinsella will direct the department for another year.

Dr. M. A. Bliss has proposed that St. Louis schools have a "visiting teacher" to determine the progress made by children and to ferret out those who have progressed as far as it seems they can, and to learn the cause of the retarded progress in such cases.

A district medical association, comprising Johnson, Bates, Cass, Vernon, Henry and Lafayette counties, was organized at Warrensburg July 17. The purpose of the organization is to promote clinics at different times in which representatives of the various counties will take part.

Dr. Caldwell B. Summers, Kansas City, and Miss Gladys Claire McGrath, Savannah, Ill., were married June 26.

(Continued on page 40)



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B. B. CULTURE meets the most exacting clinical requirements and may be used with confidence in the most critical cases.

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(Continued from page 38)

Dr. Arthur J. Nicolay and Miss Jennette Tiefenbruin, both of St. Louis, were married at Waterloo, Ill., June 20.

Dr. Thomas Leo Draney, Kansas City, and Miss Sylvia Franz, Oklahoma City, Okla., were married June 27.

Deaths

Dr. James Albert Gordon Tonge, Wakenda, aged 61, died June 15 at Carrollton from carcinoma of the bladder.

Dr. Joseph W. Ferguson, Kansas City, aged 63, died recently.

Dr. W. P. Terrill, Huntsville, aged 61, died recently.

NORTH CAROLINA

The Sixth District Medical Society was held in Henderson July 2. Dr. F. A. Abernethy, Chapel Hill, was elected President; Dr. B. W. Fassett, Durham, was re-elected Secretary.

The Mary Elizabeth Hospital Staff, Raleigh, announces the association of Dr. Verne S. Caviness, diagnosis and internal medicine, and Dr. Powell G. Fox, general medicine.

Twenty-four counties in the State, with the assistance of the State Board of Health, maintained health departments during the past year. The total expenditures amounted to $214,931.35. The State contributed $62,500 of this amount, and the balance was furnished by counties.

The clinic for children of pre-school age, which was closed several weeks ago on acount of measles, has reopened. Dr. Carl A. Grote is in charge of the clinic.

Dr. R. McBrayer announces the opening of an office in Shelby for the practice of internal medicine. Hospital affiliation is the Shelby General Hospital of fifty beds. He has been appointed director of the laboratory and x-ray departments.

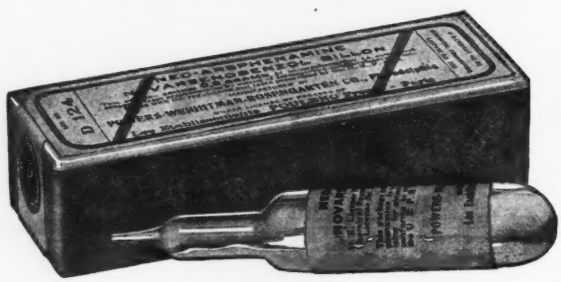
Dr. J. Rainey Parker, Burlington, received the honorary degree of LL. D. by Elon College at the recent commencement exercises.

Dr. Everett A. Lockett, Winston-Salem, has been appointed County Physician.

Dr. Edwin H. Bowling, Durham, received the degree of doctor of laws from Union Christian College, Marion, Ind., at their commencement in recognition of his work on pellagra.

(Continued on page 42)

NOVARSENOBENZOL BILLON
NEOARSPHENAMINE



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It so happens that self-rising flour has suffered from the attacks of prejudiced propaganda—a type of publicity much akin to the noise of the anti-vivisectionist and the zealous reformer opposed to vaccination. It is another example of confusing knowledge and opinion.

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Believing that the physicians of the south will be receptive to the real knowledge concerning self-rising flour, we are coming to you with a series of messages each month in the journals of the profession. All we ask is that you base your opinion upon the real merits of the case.

This is No. 1 of a series of advertisements to the medical profession regarding self-rising flour published by the Soft Wheat Millers' Association. Others will follow.

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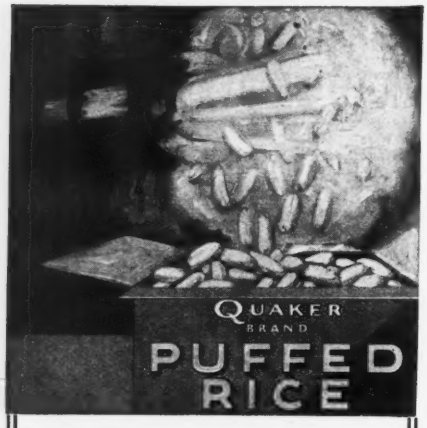

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The grains are sealed in guns, then revolved for an hour in fearful heat. The bit of moisture in each food cell is thus changed to steam.

When the guns are shot, over 125 million steam explosions are caused in every kernel. The food cells are broken. No other method so fits whole grains to digest.

Delicious morsels

The grains are puffed to airy tidbits, 8 times normal size. They are made enticing in texture and in taste. Thus whole grains are made popular.

Quaker Puffed Wheat in milk, with its minerals, vitamines and bran, forms an ideal supper dish.

Quaker Puffed Rice is the finest morning dainty homes can serve.

These two Puffed Grains, we believe, form the best-cooked cereals known.

Quaker Puffed Wheat
Quaker Puffed Rice

(Continued from page 40)

Dr. Wm. M. Jones, Jr., Greensboro, has resigned as County Physician and Health Officer.

Dr. Baxter Clyde Culler, Kernersville, and Miss Josephine Goodwin, St. Louis, Mo., were married June 12.

Dr. James Onslow Nolan, Kannapolis, and Miss Nellie Tyler Morris, Greensboro, were married at Burlington June 20.

Dr. James Ernest Stokes and Miss Rebecca Marsh, both of Salisbury, were married June 28.

Deaths

Dr. William Carson McCurry, Murchison, was found dead near the track of the Southern Railway, near Statesville, June 8.

Dr. John Manley Cain, Calahan, aged 74, died June 14 at a hospital in Statesville.

Dr. Evander McNair McIver, Jonesboro, aged 46, died July 11 from acute nephritis.

OKLAHOMA

The City Commission, Tulsa, has appointed an active Board of Health as follows: Drs. Albert W. Pigford, Arthur V. Emerson, Thomas W. Stallings, Clarence S. Summers and Irenaeus N. Tucker.

Dr. W. A. Cook, Tulsa, at the meeting of the A. M. A. in San Francisco was appointed a member of the Committee on Medical Education.

Dr. W. E. Lamerton, Enid, has been appointed Physician for Garland County.

Dr. Lin Alexander, Okmulgee, has been appointed Physician for Okmulgee County.

Dr. Ralph C. Meloy, Claremore, has been appointed Physician for Rogers County.

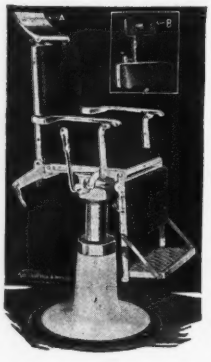
Dr. D. F. Janeway, Stillwater, has been appointed Physician for Payne County.

Dr. S. E. Mitchell, Muskogee, has been appointed as "full-time" member of the staff of the Soldiers' Memorial Hospital.

Dr. W. B. Mead, Lawton, has been appointed Physician for Comanche County.

(Continued on page 44)

FOR THE DOCTOR'S OFFICE



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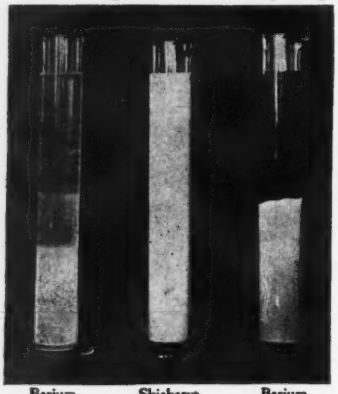

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Literature on Request

MERCK & CO. New York

(Continued from page 42)

Dr. I. W. Bollinger, Henryetta, has been appointed Physician for the south side of Okmulgee County.

Dr. H. A. Howell, Holdenville, has been appointed City Health Officer.

Col. Hugh Scott, Muskogee, has been re-elected President of the Association of Reserve Officers, U. S. Public Health Service.

Dr. Samuel N. Stone, Edmond, has been appointed City Health Officer.

Dr. Elmer E. Darnell, Clinton, has been elected President of the Oklahoma Health Officers' Association.

Dr. C. E. Barker, Oklahoma City, has been reappointed City Physician.

Dr. J. B. Lightfoot, Miami, has been appointed City Physician.

Dr. Earl Fred Camp, Buffalo, and Miss Kathleen Stephens, Topeka, Kas., were married June 28.

Dr. Albert Aisenstadt, Pitcher, and Mrs. Minnie Spencer, Long Beach, Calif., were married June 16.

SOUTH CAROLINA

A two months' infant welfare campaign, in which the State Board of Health and the county medical society are cooperating, was recently started in Abbeville County.

Branchville has voted a bond issue of $4,800 for ditching and draining to destroy the breeding places of mosquitoes.

Deaths

Dr. B. A. Mattison, McCormick, aged 65, died June 3 at Augusta, Ga., from hemorrhage, following operation for pancreatic cyst.

Dr. Thomas Pennel, Belton, aged 40, died June 29 at a hospital in New York from pneumonia.

TENNESSEE

It has been announced that the Trachoma Hospital, Morristown, will be moved to Knoxville about Septembear 1. The Staub home has been purchased for this purpose and will be moved to the Knoxville Health Center grounds and remodeled and enlarged. The Federal Government will fur-

(Continued on page 46)

Laboratories of

Drs. Bunce, Landham and Klugh

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These laboratories are equipped for making every test of clinical value in the diagnostic study of medical and surgical cases. Only standardized methods and technique are used.

In addition to the diagnostic study of cases there are adequate facilities for the x-ray and radium treatment of conditions in which these forms of treatment are indicated.

Fee lists and containers for pathological specimens and information in reference to x-ray and radium work furnished upon request.

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Solmann: Manual of Pharmacology, Ed. 2, 1922, p. 581.

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CALCREOSE solution lends itself admirably to the treatment of gastro-intestinal disorders in which it is desired to get creosote effect.

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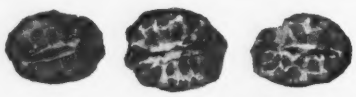

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To physicians on request.

Pettijohn's
Rolled Soft Wheat—25% Bran

The Quaker Oats Company, Chicago

(Continued from page 44)

nish the entire hospital equipment. Dr. J. E. Smith, who has been in charge of the hospital at Morristown, will have charge in Knoxville.

Davidson County Anti-Tuberculosis Association has elected the following officers: Ed Sulbacher, President; Dr. J. A. Witherspoon, First Vice-President; Mrs. John M. Kenny, Second Vice-President; Mrs. John Goode, Secretary; Drew Rowen, Treasurer.

Lewisburg County Medical Society has elected Dr. Garrett White, President; Dr. J. W. Reed, Vice-President; Dr. T. E. Reed, Secretary; Dr. S. T. Hardison, Treasurer.

The County Court of Obion County has appropriated $3,875 for the establishment of an all-time health unit in Union City in co-operation with the State.

Dr. William D. Sugg, Brentwood, has been named resident surgeon of the Nashville General Hospital.

Miss Evelyn Chase, Nashville, has been appointed Director of the Division of Maternity and Infant Hygiene.

Dr. L. D. Arbuckle, Nashville, medical officer of the navy recruiting service in the State, has been assigned to the U. S. S. Savannah. Dr. R. W. Wimberly will succeed Dr. Arbuckle.

At a recent meeting of the Coal Creek Commercial Club the following officers were named: Dr. J. M. Cox, President; M. H. Irvin, Vice-President; H. D. Hodkins, Secretary-Treasurer.

Miss Malvina G. Nisbitt has been named State Supervisor of Nurses.

Dr. Gross R. Long, Nashville, has been named physician at the main State prison at Nashville, succeeding Dr. John Overton.

Dr. E. L. Bishop, Nashville, has been appointed Superintendent of the Division of Rural Sanitation of the State Board of Health.

Deaths

Dr. Zachary David Massey, Sevierville, aged 59, died July 13 from a blood clot on the brain.

Dr. Robert Smith Doak, Nashville, aged 57, died July 4 at the Woman's Hospital.

Dr. Samuel Patton, Kingsport, aged 64, died July 11 following an operation.

Dr. Joseph Williams McCall, Huntingdon, aged 91, died August 2 after six weeks' illness from paralysis.

(Continued on page 48)

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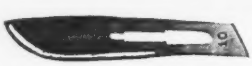
It's Sharp *It's Sharp*

No. 23. Our new blade

Blade No. 23 interchangeable with Nos. 20, 21 and 22 on Handle No. 4



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DRYCO is pure cow's milk from which the water has been removed by the rapid drying **JUST** process (212° F. for two seconds).

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DRYCO is eminently adapted for the nourishment of acutely ill, convalescent, invalid or cachectic cases.

DRYCO is the agent par excellence for easy and effective **FEEDING OF INFANTS.**

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It is evident that in his judgment that this is a demon that won't be cast out by drugs.

What else will you do?

Have you read what Dr. H. E. Stewart, of Yale, did last winter in treating this scourge with Diathermy and with such remarkable results?

Write us on your letter head and we will loan you book that will open your eyes as to this best chance that pneumonia patient has yet had for his life.

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THE ORIGINAL

The reliability of "Horlick's" is such that the medical profession has endorsed its use for over one-third century as a complete, satisfactory food for infants, and as a most efficient nutrient for nursing mothers, growing children, convalescents, and the aged.

Samples prepaid **Avoid imitations**

HORLICK'S
Racine, Wis.

(Continued from page 46)

TEXAS

The United States Veterans' Hospital No. 93, Kerrville, when remodeled and rearranged will have a capacity of 480 beds.

The City Health Department, El Paso, has been reorganized and placed on a full-time basis. The budget for 1923 was $85,625. The new department now has twenty-three full-time employees and five on part time.

The State Board of Health, as recently announced by Governor Neff, is to be composed of the following members: Drs. Murff Franklin Bledsoe, Port Arthur; Albert Fitzhugh Beverly, Austin; Wm. F. Holland, Santa Anna; Frank Lafayette Paschal, San Antonio; Arthur Carroll Scott, Temple, and Thomas B. Fisher, Dallas.

Dr. Calvin R. Hannah, obstetrics, Dallas, announces the association of Dr. Warren E. Massey, general practice.

The war memorial hospital of the Woodmen of the World, San Antonio, was recently dedicated.

Deaths

Dr. Thomas W. Carroll, Clarendon, aged 46, died July 4 at the Adair Hospital from injuries received in an automobile accident.

Dr. Henry Tracy Ivy, Hillsboro, aged 65, died June 11.

Dr. Thomas Porter Davis, Terrell, aged 65, died Suddenly June 23.

Dr. Olin L. Abney, Waskom, aged 65, died May 30 from heart disease.

Dr. John K. Davidson, Eagle Lake, aged 81, died June 24.

Dr. James Elias Dodson, Vernon, aged 76, died June 24.

Dr. Joseph Edgar Mitchell, Kosse, aged 30, died June 17 from gangrenous appendicitis.

Dr. Charles Miller Alexander, Coleman, aged 66, died in Temple May 13 following an operation.

Dr. John W. Smith, Hemphill, aged 79, died recently.

Dr. Houston Kay Weems, Jean, aged 50, died March 31 from Bright's disease.

Dr. Franklin H. Ellington, Pittsburg, aged 66, died April 9.

Dr. Richard R. Shapard, Anson, aged 75, died May 18 at Fort Worth, following an operation.

(Continued on page 50)

BORCHERDT'S MALT SOUP-EXTRACT

A STANDARD
American Product
(Free From Alcohol)
For Preparing
MALT SOUP

Of recognized value in the treatment of infants suffering from marasmus, atrophy and malnutrition.

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in conformity with the theories, formulas and processes of the discoverer, Paul Ehrlich.

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(Continued from page 48)

VIRGINIA

Norfolk County Medical Society has elected Dr. Charles W. Doughtie, President; Dr. R. L. Payne, Vice-President; Dr. Lockburn B. Scott, Secretary-Treasurer. All of Norfolk.

Wise County Medical Society has elected Dr. W. G. Painter, Big Stone Gap, President; Dr. C. B. Bowyer, Stonega, Secretary.

Drs. Lawrence T. Royster, Norfolk; Isaac Pierce, Tazewell, and Achilles L. Tynes, Staunton, have been appointed members of the State Board of Health.

The new Johnston-Willis Sanatorium, Richmond, will be ready for occupancy about November 1. It will have a capacity of about 125 patients.

Dr. Stephen Hurt Watts, Charlottsville, was given the honorary degree of Doctor of Laws by the Randolph-Macon College, Ashland, at the recent commencement.

Through the efforts of the county branch of the Virginia Tuberculosis Association, a permanent tuberculosis clinic has been established in Loudon County. Dr. Henry A. Latane, Alexandria, is the acting clinician.

Dr. W. C. Moomaw, Petersburg, has been elected one of the directors of the local Y. M. C. A.

The Central State Hospital, Petersburg, has purchased sixty acres of land lying almost directly in front of the institution.

Dr. James E. Wood, Jr., interne and house officer at the Massachusetts General Hospital, Boston, has been elected as instructor in internal medicine at the University of Virginia, Charlottesville.

On July 3 the corner-stone was laid at Nassawadox for the $150,000 Accomac-Northampton Memorial Hospital. It is expected the hospital will be completed by the first of the year.

Dr. Seale Harris, Birmingham, Ala., has established in the medical department of the University of Virginia the Charles Hooks Harris scholarship in memory of his father.

Dr. Howard Urbach, Richmond, has been elected State Physician of the Maccabees.

Dr. Osbourne O. Ashworth, Catawba, has become a member of the staff of St. Elizabeth Hospital, Richmond.

Dr. Charles W. Pritchett, Danville, has been elected President of the local Lions' Club.

Dr. Carrington Williams, Richmond, has been elected First Vice-President of the newly formed Civitan Club, Richmond.

(Continued on page 52)

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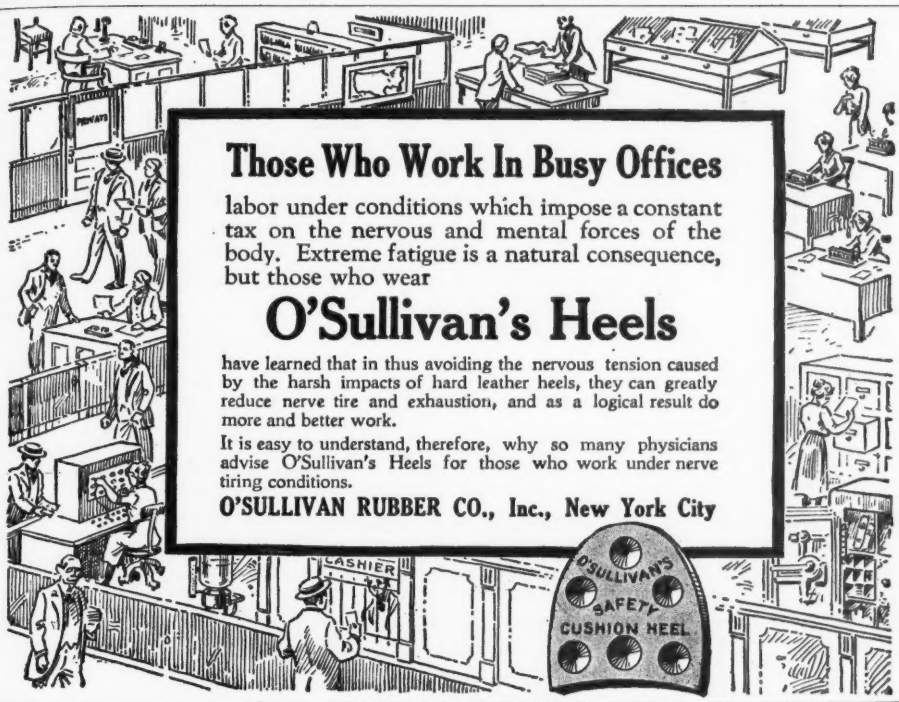

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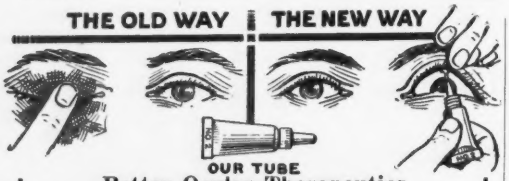

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(Continued from page 50)

Dr. Hunter H. McGuire and Mrs. Jane Love Baker, both of Winchester, were married at Asheville, N. C., June 12.

Dr. Eybryne Grady Gill and Miss Ruth Meals, both of Roanoke, were married June 16.

Dr. Lawrence Hites Hoover and Miss Flossie Webster McFarland, both of Clarksville, were married at Richmond June 17.

Dr. James Edwin Wood, Jr., and Miss Emily Mildred Battle, both of Charlottesville, were married June 28.

Deaths

Dr. Lawton Betts Moore, Charlottesville, aged 61, died July 3 following a long illness.

Dr. William Elbert Killinger, Victoria, aged 29, was drowned June 17.

Dr. Robert R. Jones, Diamond Grove, aged 88, died June 7 from old age.

WEST VIRGINIA

Dr. E. B. Gerlach, Huntington, City Health Officer, announces the opening of the city urological clinic in the basement of the city hall. The clinic will be in charge of Dr. R. M. Bobbitt, Dr. J. C. Matthews and Dr. Rudolph Ruedeman, and will be open from 1 to 2 o'clock in the afternoons of Monday, Wednesday and Friday of each week. The physicians are giving their services to the work.

Dr. W. C. Thomas, formerly with the Baltimore Eye and Ear Hospital, and who has been in charge of the Government Trachoma Hospital, Morristown, Tenn., and Pikeville, Ky., is now a member of the staff of the Hawes-Marple Hospital, Huntington.

Drs. W. Carl Kapper, Richmond, Va., and W. W. Nicholson and F. F. Helm, Louisville, Ky., have been added to the staff of the Chesapeake and Ohio Hospital, Huntington.

Deaths

Dr. Hugh L. Judge, Wellsburg, aged 69, died June 30 following a long illness.

Dr. William John Blake, Benwood, aged 38, died June 25 at the Ohio Valley General Hospital, Wheeling.

Dr. Isaac H. Robbins, Richwood, aged 55, died June 14 from heart disease.

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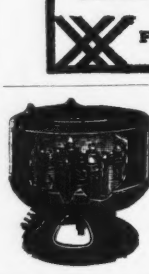

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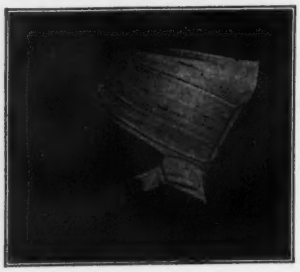

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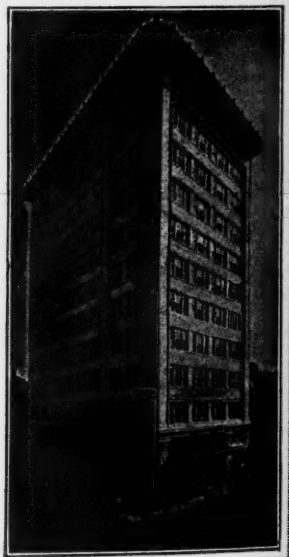

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